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PERFORMANCE STANDARDS *for Tank Truck Salesmen* OF CONSUMERS COOPERATIVE ASSOCIATION LOCALS

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The Cooperative Research and Service Division conducts research studies and service activities relating to problems of management, organization, policies, merchandising, sales, costs, competition, and membership arising in connection with the cooperative marketing of agricultural products and the cooperative purchase of farm supplies and services; publishes the results of such studies; confers and advises with officials of farmers' cooperative associations; and cooperates with educational agencies, cooperative associations, and others in the dissemination of information relating to cooperative principles and practices.

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SUMMARY

First aim of the study covered in this report was to establish standards of performance for tank truck salesmen of petroleum products for local cooperatives affiliated with Consumers Cooperative Association, Kansas City, Mo. -- a regional agricultural cooperative which manufactures and then wholesales petroleum products and other supplies to these locals in the Midwest.

In addition, during the study, information was collected as a basis for suggestions to help salesmen reach such standards and on what causes variations in delivery operations, efficiency and costs.

Personal interviews with managers and many of the 128 salesmen of 57 of the more successful cooperatives in six States were held and data obtained on their operations during the 12-month period ending September 30, 1950.

From this information the recommended standards of performance set out in the table immediately following this summary, were worked out. If most of the salesmen now below those standards are able to come up to these proposed performances they perhaps can increase the volume of the cooperatives by a third to a half. In general, a salesman in both Eastern and Western areas of CCA's territory should deliver about 400,000 gallons of refined fuels annually. Total delivery costs should average about 1.2 cents per gallon of the fuel delivered.

Salesmen can increase their volume by handling other products such as tires, batteries, insecticides, and paint, by serving city fuel oil patrons and service stations, and by working hard at getting new farm patrons. Type of farming, number and kinds of equipment using petroleum, and nature of competition in the area served affect each salesman's potential.

This report suggests careful planning of deliveries to keep miles traveled at a minimum and to cut costs, replacing tank trucks when they wear out with larger volume tanks, and encouraging farmers to have more storage. The study found that intensive training programs are needed to help salesmen improve their operations. Sales contests and awards should help raise their performance.

Some cooperatives need much better records of the operations of the salesmen and the truck. So this report also includes some suggested accounting forms that may help improve operations.

A summary of the findings on volume of products delivered and miles traveled by salesmen follows:

1. Quantity handled per salesman has increased greatly in recent years as farm consumption and storage facilities of petroleum products has increased. Half of the 92 salesmen in the Eastern or general farming part

of CCA's territory delivered more than 300,000 gallons of liquid fuels a year. Half the 36 salesmen in the Western or wheat area sold more than 313,000 gallons a year. One-fourth exceeded 385,000 gallons in the Eastern and 378,000 gallons in the Western area. There was a wide range in the number of gallons delivered by salesmen -- from 61,840 to 828,086 gallons. With the extremes eliminated, the range was from 150,000 to 600,000 gallons per man.

2. Volumes of the Western salesmen were more seasonable due to the type of farming and smaller use of fuel oil for heating purposes. The percentage delivered per month ranged from a low of 7.1 to a high of 10 percent in the East and from 4.7 to 15.8 percent in the West.

3. Farm deliveries represented from 81 to 84 percent of the total in the two areas. About one-fourth of each group of salesmen delivered more than 320,000 gallons of fuel to farmers. Deliveries to nonfarmers (mostly city fuel oil patrons, churches and schools) were larger in the Eastern area. Those salesmen with service station business had considerably larger gasoline volumes, especially in the Eastern area.

4. Gasoline volume per salesman averaged 237,000 gallons, or 74 percent of total deliveries in the Western area compared with 190,000 gallons, or 59 percent of the total in the East. Tractor and diesel fuel, constituted only 3.7 and 6.2 percent in the respective areas. Heating fuels, consisting of kerosene and distillate fuel oil, averaged 119,000 gallons (34 percent of the total) per salesman in the Eastern area, and about 64,000 gallons (15 percent) in the Western area.

5. The median volume -- that is the mid-point of what the salesmen sold when arranged from highest to lowest volume -- of lubricating oil delivered per salesman was 2,400 gallons in the Eastern area which was equivalent to 1.3 percent of their motor fuel volume. One-fourth each exceeded 3,500 gallons and a ratio of 1.6 gallons per 100 gallons of motor fuel.

In the Western area, the median was 3,900 gallons and 1.4 gallons per 100 gallons of motor fuel. One-fourth each exceeded 6,000 gallons and a ratio of 1.7 to 100. The monthly volume from March through September was much larger in the Western than in the Eastern area, and the peak volume came later in the spring in the Western area.

7. Deliveries of grease were similar to those of motor oil. The median volume delivered per salesman in the Eastern area was 2,625 pounds which was equivalent to 1.3 pounds per 100 gallons of motor fuel, and 1.1 pounds per gallon of lube oil. One-fourth each exceeded 3,950 pounds annually; a grease-motor fuel ratio of 1.8 to 100; and a grease-lube oil ratio of 1.25 to 1.

Median volumes for the Western salesmen were a little over 4,000 pounds annually; 1.3 pounds per 100 gallons of motor fuel; and 1.0 pound

per gallon of lube oil. One-fourth of the men exceeded 6,000 pounds; 1.8 pounds per 100 gallons of motor fuel; and 1.5 pounds per gallon of lube oil.

8. Few salesmen sold or delivered tires, batteries, accessories, and other supplies along with petroleum products or kept separate records on such sales. They didn't like handling these items because of the time required and the fact that many farmers were not at home when they called. Some salesmen, however, sold certain seasonal items such as fly spray, antifreeze, and related merchandise during slack seasons of motor fuel use.

9. Salesmen reporting had an average of 185 farm patrons and from 40 to 60 nonfarm patrons, most of them city fuel oil users, in both areas. Thirty-seven men delivered fuels to service stations. Most serviced churches and schools, but not many reported supplying highway departments, construction companies, and other commercial or Governmental firms.

10. Few salesmen were keeping a record of miles driven but a number were able to make usable estimates. They drove from 10,000 to 31,500 miles during 1950 with the median 16,000 miles and the average nearly 17,000 miles.

11. Records on 63 salesmen showed that they delivered an average of 19.2 gallons of petroleum products per mile driven in 1949-50, exclusive of volume delivered to service stations. The range was from 8.8 to 38.3 gallons per mile. One-fourth of the salesmen exceeded 23.2 gallons per mile. Those with the highest "gallons per mile" generally attained this by both a larger annual volume and a lower annual mileage. The high 13 men, or 25 percent, on which data were available, delivered an average of 435,620 gallons (exclusive of station volume) on 15,900 miles, or 27.4 gallons per mile. The low 25 percent delivered an average 238,250 gallons on 18,100 miles, or only 13.2 gallons per mile.

Following were the principal findings on the delivery costs of the associations and salesmen:

1. Eighty-six percent of the salesmen in the Eastern area were employed on a commission basis and the other 14 percent were on a salary basis. In the Western area only 18 percent were on commissions and 82 percent were on salaries. All commission men except 3 owned their trucks. Cooperatives owned all truck tanks and practically all pumps and meters.

2. The most common rates of commission paid on deliveries to farms in 1949-50 were 2 cents a gallon on gasoline and kerosene; 1.5 cents a gallon on other motor and heating fuels; 5 cents a gallon or 10 percent of sales on lube oil; 1 cent a pound or 10 percent on grease; and 10 percent on other supplies. Lower rates prevailed for deliveries to local stations and those in other towns.

3. Gross commissions of 30 salesmen averaged about \$4,900 a man or 1.41 cents a gallon of product delivered. Other delivery costs of the cooperatives brought the total to a little more than \$5,100 a salesman, or 1.48 cents a gallon and 31.8 cents per mile driven. Net commissions earned by the salesmen after deducting their truck and other expenses averaged about \$3,550 a man, or 1.01 cents per gallon delivered.

4. Total delivery costs where salesmen were employed on a salary basis in 1949-50 averaged about \$4,400 a salesman, or 1.21 cents a gallon and 28.6 cents a mile driven. The average salary received was \$2,700 a salesman on 15 reporting complete delivery costs. This was equivalent to 0.74 of a cent a gallon of product delivered. Truck operating expenses of this group averaged \$1,400 per truck, or 0.39 of a cent a gallon. Other delivery costs averaged \$291 per salesman, or 0.08 of a cent a gallon.

5. Itemized expenses of 32 tank trucks (owned by the cooperatives or their salesmen) showed average operating expenses of approximately \$1,250. This was equivalent to 7.78 cents a mile, of which 5.45 cents were cash expenses and 2.33 cents were depreciation costs.

The principal factors on type of area association served and equipment used which influenced variations in delivery operations and costs were as follows:

1. Motor fuel consumption is more seasonable in the Western wheat farming area than in the Eastern general farming area, and there is not as large an urban potential for fuel oil in the Western area. The topography and road systems in any area affect the size of delivery equipment which can be used.

2. The number of motor vehicles and farm homes determines the potential volume in a territory. The total number of tractors, autos, and trucks increased 22.5 percent in the six States in which those cooperatives studied were located. The Eastern area had about 60 percent more motor vehicles per square mile than the Western area, and approximately twice as many farmers per square mile. The amount and degree of competition varied considerably among the salesmen's territories and influenced the proportion of the potential cooperative salesmen could obtain.

3. Tank truck salesmen employed in the older successful cooperatives with a record of cash patronage refunds have larger volumes than those in the newer associations. Operating policies of the cooperatives on loaning farm storage, giving volume or quantity discounts, handling non-farm or city fuel oil and station business, extending credit, and assisting managers and directors all influence the volume a salesman may obtain.

4. More than three-fourths of the trucks used by the salesmen had a capacity of $1\frac{1}{2}$ tons. One-half were less than 3 years old, and one-half were owned by the salesmen.

5. Cooperatives have been obtaining larger truck tanks in recent years. In 1950, one-half were 800 gallons or more in size. This had helped in delivering larger volumes and in reducing the number of trips back to the bulk plant to refill. About one-third of the salesmen preferred 1,000-gallon tanks when their present ones had to be replaced. All tank trucks were equipped with mechanical unloading equipment which has greatly speeded up deliveries and made possible the use of overhead farm storage tanks mounted on stands.

6. Farmers have increased their storage for fuels greatly in recent years. This enables salesmen to make larger "drops" of fuel and less trips to each farm per month or year. Farmers in the Eastern area had somewhat smaller storage for their liquid fuels than those in the Western area. About 34 percent had less than 200 gallons compared with 20 percent in the West, while only $9\frac{1}{2}$ percent had more than 500 gallons compared with 25 percent in the Western area.

7. Few cooperatives in the Midwest have loaned storage tanks and pumps to farmers but all have encouraged them to buy large tanks. The most common ways this has been done were by selling tanks at or near cost, by giving volume or quantity discounts for minimum deliveries or "drops," and by continuous educational work on the advantages of more storage to both the farmers and the cooperative. The most prevalent volume discounts were $\frac{1}{2}$ to 1 cent for minimum deliveries of 200 to 300 gallons.

Delivery and operating practices of salesmen which affected their performance were as follows:

1. Practically all salesmen served specific territories. Deliveries were made mostly on the basis of orders. Four salesmen in the East operated largely on established routes. A few in each area made part of their deliveries in response to orders and part on scheduled routes. Hence, there was an insufficient number operating on routes to compare their operations and efficiency.

2. The most common practice in both areas was to group and route orders in one community so that a full load of fuel could be disposed of with a minimum amount of travel. Orders were received in advance by telephone or person, and a number of farmers gave "standing" orders to keep their tanks filled or to leave fuel whenever the salesman was in their community. A few salesmen anticipated when farmers in a locality would be in need of fuel and then began calling on and delivering fuel to them on somewhat of a route basis.

3. The four salesmen operating on scheduled routes usually had four to six routes each. Two covered them every week in busy seasons and every two weeks during slack seasons of fuel consumption. One made them twice this often in both seasons. There was considerable difference of opinion regarding the route system. A number of managers thought it would be most efficient, but lack of farm storage, the heavy seasonal demands for fuel, and hesitancy of salesmen to change systems were among the principal

reasons why they had not used routes. In the Western area, the large orders and highly seasonal use of fuel were the main reasons given why routes were considered impractical. Some in both areas believed, however, that they might be used by new salesmen continuously and by all salesmen during slack seasons.

4. The territories of the Eastern salesmen were somewhat smaller than those of the Western men. Their median size was about 300 square miles compared with 500 miles for the Western area. Several large volume salesmen served large areas and thus had rather high mileage.

5. As a rule salesmen and managers did not have definite plans or programs for soliciting prospective patrons each week. Some with the help of their directors, however, had participated with good results in membership and trade drives and round-up campaigns sponsored by Consumers Cooperative Association.

6. Data were not available on the credit and shrinkage control and safety records of each salesman in most associations. His performance would be influenced greatly, however, by the general policies of the association and the strictness of the managers for internal controls.

Following is a summary of the personnel factors influencing delivery operations:

1. The most important influences on the performance of salesmen were their ability and characteristics. Their willingness to work and give prompt and dependable service, in addition to honesty and courtesy were listed among the most important attributes of the high volume men.

2. These salesmen with the longest experience and tenure, either with the cooperative or on the same territory, had larger volumes than the newer men. Half of the salesmen had been with the cooperative five years in the Eastern and three years in the Western area. The range was from six months to 24 years.

3. Strong arguments were advanced by advocates of both the commission and salary basis of paying salesmen. Many believed the commission system provided more incentive to work. It meant they were paid in proportion to their volume, and it placed responsibility for the truck and for credit control on the salesmen. Others believed that good men would work on a salary and that wages could be in proportion to volume; that it was easier to reapportion territories and control delivery practices of salesmen; and that during slack seasons of fuel use salesmen could work in other departments if they were on a salary basis. Data on 30 salesmen on a commission and 24 on a salary basis, however, showed that the average volume of each group was almost the same.

4. As a rule, salesmen had received little training except from the manager, older salesmen, and fieldmen of CCA. Several had attended the petroleum schools sponsored by CCA and it was evident that they had a broader knowledge of the subject and the operations of other petroleum cooperatives.

5. The principal sales programs and contests were booking orders for future delivery of lube oil and grease and trips for those showing the largest increase in volume over the previous year. Many favorable comments were received regarding these programs. More incentive programs were needed to encourage increases in volume and patrons throughout the area.

SUGGESTED STANDARDS OF PERFORMANCE

Developing standards of performance for tank truck salesmen is a step in helping both the cooperatives and salesmen obtain larger volumes and lower operating costs. Such standards can serve as yardsticks of efficiency and help measure progress from year to year.

The following standards are suggested with the idea that Consumers Cooperative Association and other regionals can use them in training programs and in establishing quotas for sales contests. However, it should be remembered that these standards are preliminary and will change as operating conditions shift and additional information is acquired. Also, successful salesmen will be above and below certain of these standards because of variations in the proportion of each product sold, potentials in their territories, and other factors.

These standards were primarily based on a performance exceeded by the upper one-fourth of the salesmen included in the study because it was believed that in performance this entire group was above the average of all salesmen in CCA's territory.

Suggested annual standards of performance for tank truck
salesmen of Midwestern cooperatives, by areas

Measures of performance	Annual standards	
	Eastern area ¹	Western area ¹
1. Total gallons of refined fuels delivered-----	400,000	400,000
2. Volume delivered by types of patrons:		
(a) Gallons of refined fuels to farms-----	320,000	340,000
(b) Gallons of refined fuels to non-farms-----	50,000	20,000
(c) Gallons of refined fuels to stations-----	30,000	40,000
3. Volume by types of fuels delivered:		
(a) Gallons of gasoline-----	235,000	295,000
(b) Gallons of tractor fuel-----	14,000	15,000
(c) Gallons of diesel fuel-----	1,000	10,000
Total gallons of motor fuel-----	250,000	320,000
(d) Gallons of kerosene-----	15,000	20,000
(e) Gallons of distillate fuel oil-----	135,000	60,000
Total heating fuels-----	150,000	80,000
4. (a) Gallons of lube oil delivered-----	4,000	5,120
(b) Gallons of lube oil per 100 gallons of motor fuel-----	1.6	1.6
5. (a) Pounds of grease delivered-----	4,500	5,440
(b) Pounds of grease per 100 gallons of motor fuel-----	1.7	1.7
(c) Pounds of grease per gallon of lube oil-----	1.1	1.1
6. (a) Miles driven on farm deliveries and calls-----	15,450	17,000
(b) Miles driven on city deliveries and calls-----	1,250	500
Total miles driven on deliveries and calls-----	16,700	17,500
7. (a) Gallons of oil products delivered (exclusive of station volume) per mile driven-----	24	22
(b) Gallons of oil products delivered to farms per mile driven to farms-----	21	20
8. Sales of miscellaneous supplies-----	\$2,500	\$2,000
9. Total sales of oil products and other supplies ² -----	\$80,000	\$80,000
10. (a) Number of regular farm patrons-----	175	135
(b) Number of regular city fuel oil patrons-----	40	20
(c) Number of other patrons (schools, churches, etc.)-----	15	10
11. (a) Number of prospective patrons contacted-----	75	50
(b) Number of new patrons obtained-----	25	17
12. (a) Delivery wages (salaries or net commissions) per gallon of refined fuels-----	0.8¢	0.8¢
(b) Delivery wages per dollar of sales of all products ² -----	4.5¢	4.5¢
(c) Delivery wages (based on volume standards for all products)-----	\$3,600	\$3,600
13. (a) Tank truck expenses per mile-----	7.5¢	7.5¢
(b) Tank truck expenses per gallon of fuel delivered-----	0.33¢	0.33¢
(c) Miles travelled per gallon of gasoline used-----	Varies with age, make, and care of truck.	
14. Other delivery costs per gallon of refined fuels-----	0.07¢	0.07¢
15. (a) Total delivery costs per gallon of refined fuels-----	1.2¢	1.2¢
(b) Total delivery costs of all products per dollar of sales ² -----	6.75¢	6.75¢
16. Capacity of truck tank - minimum gallons-----	800	1,000
17. Average capacity of farm storage - minimum-----	Two weeks supply for peak needs of each farmer.	
18. Delivery systems used-----	(1) Busy seasons: advance orders grouped and routed daily.	
	(2) Slack seasons: scheduled routes covered at regular intervals.	
<u>Association - Bulk Plant - Salesman Standards:</u>		
19. (a) Percent cash sales - minimum-----	75	75
(b) Days of credit sales outstanding- maximum-----	10	10
20. (a) Percent of shrinkage in gasoline - maximum-----	1.0	1.0
(b) Percent of shrinkage in other refined fuels - maximum-----	0.7	0.7
(c) Percent of shrinkage in lubricating oil - maximum-----	1.0	1.0
(d) Percent of shrinkage in grease - maximum-----	1.0	1.0

¹The Eastern or general farming area consists of Iowa, Missouri, and the eastern portion of Kansas, Nebraska, and South Dakota. The Western or wheat farming area consists of the central and Western portion of Kansas, Oklahoma, Nebraska, and South Dakota.

²Sales do not include taxes on gasoline and other taxable products.

MONTHLY QUOTAS FOR DELIVERING 400,000 GALLONS OF FUEL AND SPECIFIED VOLUMES OF LUBRICATING OIL AND GREASE ANNUALLY PER SALESMAN, BY AREAS

Cooperative _____ Address _____										Cooperative _____ Address _____									
Salesman _____ Truck No. _____										Salesman _____ Truck No. _____									
EASTERN AREA										WESTERN AREA									
195—	MOTOR FUEL (gasoline, diesel, and tractor fuels)		HEATING FUEL (kerosene and distillate fuel oil)		LUBRICATING OIL		GREASE		195—	MOTOR FUEL (gasoline, diesel, and tractor fuels)		HEATING FUEL (kerosene and distillate fuel oil)		LUBRICATING OIL		GREASE			
	Quota	Actual	Quota	Actual	Quota	Actual	Quota	Actual		Quota	Actual	Quota	Actual	Quota	Actual	Quota	Actual		
Gallons										Gallons									
Pounds										Pounds									
Jan.-----	8,000		28,000		120		40		Jan.-----	10,000		10,000		170		90			
Feb.-----	9,000		20,000		200		110		Feb.-----	12,000		9,000		170		90			
Mar.-----	17,000		19,000		490		340		Mar.-----	18,000		9,000		470		300			
3 mo.-----	34,000		67,000		810		490		3 mo.	400,000		28,000		810		480			
April-----	29,000		11,000		680		830		April-----	22,000		6,000		490		440			
May-----	34,000		5,000		400		480		May-----	27,000		3,000		500		450			
June-----	31,000		2,000		360		400		June-----	57,000		5,000		950		1,450			
6 mo.-----	128,000		85,000		2,250		2,200		6 mo.-----	146,000		42,000		2,750		2,820			
July-----	27,000		4,000		340		540		July-----	46,000		4,000		680		920			
Aug.-----	24,000		7,000		350		380		Aug.-----	40,000		5,000		550		670			
Sept.-----	21,000		8,000		260		350		Sept.-----	37,000		6,000		500		520			
9 mo.-----	200,000		104,000		3,200		3,470		9 mo.	269,000		57,000		4,480		4,930			
Oct.-----	22,000		9,000		330		630		Oct.-----	19,000		6,000		260		230			
Nov.-----	17,000		14,000		240		250		Nov.-----	15,000		7,000		160		180			
Dec.-----	11,000		23,000		230		150		Dec.-----	17,000		10,000		220		100			
12 mo.-----	250,000		150,000		4,000		4,500		12 mo.-----	320,000		80,000		5,120		5,440			

PERFORMANCE STANDARDS FOR TANK TRUCK SALESMEN OF CONSUMERS COOPERATIVE ASSOCIATION LOCALS

By J. Warren Mather
Senior Agricultural Economist

Petroleum products were first delivered to farmers in the Midwest area served by Consumers Cooperative Association, Kansas City, Mo., with horse-drawn tank wagons. During and immediately after World War I the use of tractors and farm trucks increased rapidly, better roads were built, and trucks with 300 to 400-gallon tanks soon replaced horses and tank wagons. Farms became more mechanized, tractors were used for more jobs, and roads were further improved so that by the time of World War II, many trucks were equipped with 800-gallon tanks. Since then a number with capacities of 1,000 to 1,200 gallons have been obtained.

For many years farmers stored their fuel in 55-gallon barrels. Then they acquired tanks of 300-gallons or more in size and in the wheat area many farmers now have 500-gallon and even some 1,000 gallon tanks in which to store their fuel needs. Increased use of fuel oil for heating farm homes also has been an important development in recent years.

The upward trend in farm consumption of petroleum products resulting from the increased mechanization of agriculture has therefore brought about changes in delivery practices and equipment and has introduced new problems. The distinctly cooperative features of these problems and answers to them need to be studied if cooperatives are to continue to better their performance in serving farmers.

OBJECTIVES OF STUDY

Representatives of Consumers Cooperative Association (hereafter referred to as CCA), Kansas City, Mo., realized that wide variations existed in the performance and efficiency of salesmen of its affiliated local cooperatives, and that more information was needed to develop training and sales programs for their improvement. They, therefore, suggested that the Cooperative Research and Service Division of the Farm Credit Administration conduct a study of the delivery operations of a group of these associations.

Note: Appreciation is expressed to the employees of local associations studied for their cooperation; to Merton Trust who obtained data on approximately one-half of the associations included in the study while Extension Training Supervisor for Consumer Cooperative Association; and to the Advisory Committee established by CCA which helped plan the study. The writer also acknowledges helpful suggestions from Martin A. Abrahamsen, In Charge, Purchasing Section, Cooperative Research and Service Division; and credit is due to Mrs. Georgia Bender and Mrs. Ruth Christie for performing the statistical analysis and to Mrs. Eileen Riley and Mrs. Mary Eberly for preparing the manuscript.

The main objective of the study was to establish standards of performance for individual tank truck salesmen operating in the area served by CCA, and to offer suggestions which would help them attain these standards. The study also attempted to obtain information on factors which influenced variations in delivery operations, efficiency, and costs. So data were obtained on volume delivered by types of products and patrons, miles driven, operating practices, equipment used, delivery costs, and other quantitative information which indicated the output and efficiency of the salesmen.

The use and attainment of such standards should increase the volume of most salesmen and local cooperatives, and of CCA - their regional wholesale association and should mean more efficient and improved delivery service, thus reducing handling costs per unit. These results would in turn mean increased savings, thus lowering the farm production costs of members of the cooperatives. In some cases they also would mean a higher level of pay for the salesmen. Furthermore, careful and efficient operation of tank trucks not only would mean lower delivery costs, but would conserve manpower, gasoline, tires, and trucks -- all vital during periods of defense mobilization.

Other cooperatives with similar operating conditions can apply many of these findings to their own tank truck delivery.

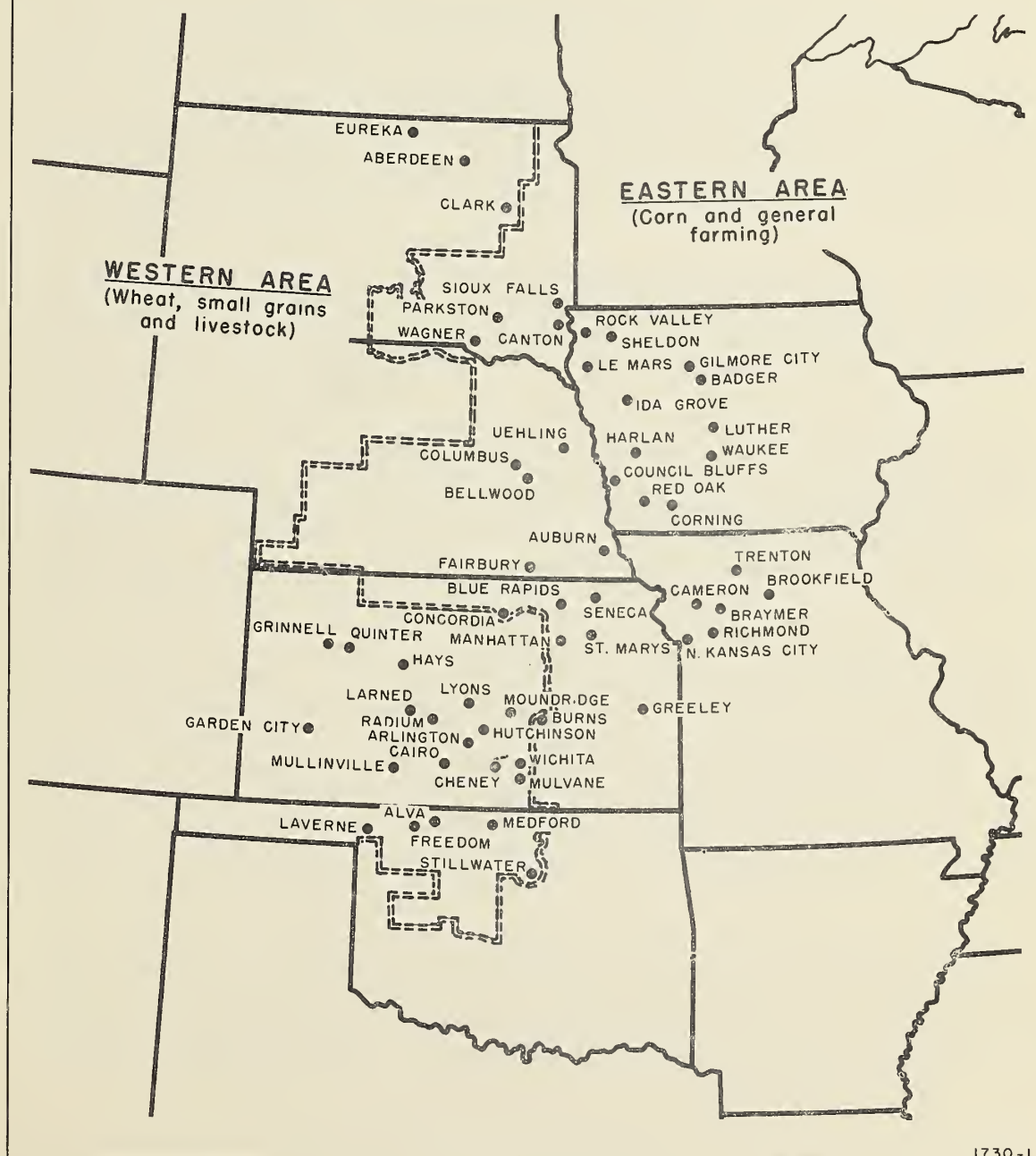
METHODS AND PROCEDURES

To help plan the project and review the findings and recommendations, CCA established a research advisory committee, and also made available the services of a fieldman who obtained data on about half the associations selected for study.

In the absence of available data on salesmen with the most outstanding delivery performance the volume and success of the associations as a whole were used as a basis for selection. It was assumed that the most successful associations would have the most outstanding tank truck salesmen. Fieldmen and members of the Advisory Committee of CCA therefore were asked to prepare a list of approximately 125 of the most successful associations in their districts. From these about 60 would be selected for study, thus leaving an equal number available as alternates. This number represented slightly more than 10 percent of the local cooperatives which CCA supplied with refined fuel and other oil products.

Fieldmen and auditors evaluated success of the associations on the basis of their long experience in working with all cooperatives in their districts. They took into account volume, handling costs, net savings per dollar of sales, proportion of the farm business handled, and type of management and employees. Also, certain information was obtained from the fieldmen on the 125 recommended associations so that the

FIGURE 1
HEADQUARTERS OF COOPERATIVES DELIVERING
PETROLEUM INCLUDED IN SURVEY





following types of operations and situations could be included among the cooperatives selected by the advisory committee and the writer for study:

1. Salesmen who were known to deliver large volumes.
2. Good delivery records.
3. Different types of delivery practices believed to be efficient.
4. Varying numbers of tank truck salesmen.
5. Different methods of paying salesmen.
6. Different types of farming areas.

Where there appeared to be no choice in making final selection of those to survey in an area, two associations located close together were selected for each day's work in order to conserve time and to make it possible to drive to the next group in the evening. Cooperatives located near the edges of the territory served by CCA were not included because of the travel involved. Where associations were found to have inadequate delivery records, available data on equipment and delivery practices were obtained and alternate cooperatives were interviewed in most cases.

Information was obtained by personal interview with the use of questionnaires on a total of 57 associations and 128 tank truck salesmen late in 1950 and early in 1951 (Figure 1). Emphasis was placed on acquiring data relative to practices and problems peculiar to cooperatives and their salesmen.

Since the area served by CCA covers nine midwestern States (Oklahoma, Kansas, Nebraska, South Dakota, southern North Dakota, Colorado, Wyoming, Iowa, and northern Missouri) the associations studied were grouped into two broad types of farming area; namely, the Western wheat farming area and the Eastern general farming area, including the cornbelt (Figure 1).

This grouping was made because motor fuel was used by farmers more on a year-round basis in the general farming area, while in the wheat belt consumption was much more seasonable. Also, more heating fuel was used in the Eastern area. There was, of course, overlapping of areas with some general farming, cattle and hog feeding, and dairying in the eastern part of the wheat area of Kansas. Although the data were tabulated by area to show the influence of differences in operations and types of fuel handled, many of the factors influencing delivery efficiency applied equally to each area.

The standards of performance included in this report are those which can be measured in terms of quantities or ratios. They indicate the output which could be expected of salesmen who efficiently sell and deliver a well-balanced volume of products. Although briefly mentioned, detailed attention was not given other practices or yardsticks of

good performance such as controlling credit and shrinkage, practicing safety, handling complaints, and explaining the cooperative principles.

Most of the standards of performance suggested in this report were based on the median of the upper half of the salesmen when arranged from high to low. (The median is the mid-point of the group and is more typical than an average because it is not influenced by extremes.) This means that one-fourth of the entire number were already exceeding the standards suggested. Since the group studied was believed to be above average, such standards would seem reasonable and possible of attainment. In some cases, however, the median of the upper 20 percent was also given because officials of some regional cooperatives have used the median or average of the upper 20 or 30 percent as goals or standards toward which their salesmen should strive.

No attempt was made to determine minimum standards or those at which a salesman would have to operate to break even. They would vary among communities with the gross margins realized on various products, the level of wages paid salesmen, and the volume of all salesmen over which the overhead expenses of the association could be spread.

Certain handicaps and limitations of data were encountered in conducting the study. These were:

1. Additional associations and salesmen in the Western area of CCA -- especially in eastern Colorado and western Nebraska -- should have been studied. Also, some associations in eastern Iowa whose salesmen were delivering in regular daily routes should have been surveyed because few of those studied were using this system. It was not possible, however, to include these because available personnel and funds were limited.
2. It was not always possible to interview the managers because some were not in their office or had prior engagements. Also, it was not possible to interview all salesmen because they were making deliveries and those at outlying stations were not contacted, or included in the study.
3. There was a serious lack of detailed records in some associations, and a lack of uniformity among those which did have good records.
 - a. A number of associations did not keep separate records of volume delivered by each tank truck operator employed on a salary basis. Others kept separate weekly reports on each which required summarizing.
 - b. It was usually necessary to obtain estimates on the proportion of gasoline delivered to farmers and to commercial or governmental users, and the proportion of fuel

oil delivered to farmers and to city or nonfarm patrons. Also, the volume delivered to service stations was not always kept separate.

- c. Few salesmen kept a record of the miles driven by their trucks in making deliveries. None kept their mileage on the basis of rural and city deliveries.
 - d. Few associations kept a record of the operating expenses of their owned trucks, and those kept by salesmen who owned trucks varied greatly as to detail. Also, it was often necessary for salesmen owning their trucks to provide such expenses at a later date by correspondence which reduced the percentage on which data were obtained.
 - e. Bulk plants and service station sales and expenses were combined in some instances, thus making it impossible to get cost data needed for the study.
4. Because of these limitations, data for various items of comparisons and averages used were based on the number of associations or salesmen reporting information for each item.

CHARACTERISTICS OF LOCAL ASSOCIATIONS

The cooperatives included in this study were among the older, larger and more successful in the area served by CCA. The following points give some idea of the characteristics and operations of them.

- 1. Age - Approximately 18 percent were less than 10 years old, 50 percent were between 10 and 25 years; and 32 percent were over 25 years old.
- 2. Years in oil business - Not all of the associations had handled petroleum since their organization. About one-fourth had operated bulk plants less than 10 years; two-thirds had operated them from 19 to 25 years; and only 10 percent had been in the oil business more than 25 years.
- 3. Type of business - About one-third were strictly petroleum associations; 27 percent were general supply purchasing cooperatives; and 40 percent were elevator-oil associations.
- 4. Area served - Only nine associations were county-wide from the standpoint of area served. With the exception of a few with one or more branch stations, the remainder served only a local community.
- 5. Members and patrons - Forty-five percent had less than 500 members; 27 percent had from 500 to 1,000; and another 28 percent

had more than 1,000. These associations had about one-third more patrons than members, but the number of patrons taking deliveries of fuel on their farms was substantially less than the total.

6. Petroleum and supplies volume - Both large and small volume associations were included from the standpoint of petroleum. The total quantity of refined fuels handled ranged from approximately 225,000 to 2,775,000 gallons per association. Sales of petroleum products and related supplies ranged from about \$50,000 to \$500,000 per association.
7. Number of bulk plants - Seventy-seven bulk plants were operated by 57 associations. Only 12 operated more than one plant. Four was the largest number operated by one association.
8. Number of tank trucks and salesmen - Associations having from one to nine salesmen and tank trucks were included in this study. The average was 2.4 per association.
9. Method of paying salesmen - Thirty-one associations employed their salesmen on a commission basis and the other 26 employed them on salary basis. Of 134 salesmen employed by the cooperatives, 89 received commissions and 45 received salaries.
10. Number of service stations operated - All except seven operated at least one service station, and a number served additional stations. A total of 87 service stations were supplied by the cooperative salesmen.
11. City fuel oil patrons and business - Both associations with no city fuel oil volume and those with considerable volume of this type were included. The exact number of patrons were not obtained but the average nonfarmer patrons of all types was about 50 per association.
12. Miscellaneous petroleum patrons - Considerable variation existed in the number of schools, churches, governmental highway departments, curb pumps, garages, and other commercial or construction companies which were supplied with petroleum products. A few cooperatives served as many as 12 or 15 schools and four or five churches, but not many supplied townships, county or State highway departments.
13. Handling costs for petroleum and related supply volume - Total operating expenses or handling costs of the petroleum and other supply business averaged about 17 percent of sales for those which kept records on a departmental basis. The range was from 11 to 21 percent.
14. Net savings on oil and supplies - During 1949-50, total net savings realized on petroleum and related supplies averaged 4.5

percent of sales for those keeping departmental records. Only about 0.5 of one percent consisted of patronage refunds from their regional association and other income.

15. Patronage refunds on oil and supplies - Most of the associations have paid patronage refunds in cash in seven or more years out of the last ten. The rates have usually ranged from 4 to 6 percent of sales in Oklahoma, Missouri, Nebraska, and Kansas and from 5 to 10 percent in Iowa and South Dakota.

16. Percent of farm petroleum business handled - Although data were not available on the proportion of farm petroleum business which cooperatives handled in their territory, the majority estimated between 20 and 33 percent. About one-third of the group believed they handled 50 percent or more of the total potential.

DELIVERY OPERATIONS OF TANK TRUCK SALESMEN 1/

Most of the petroleum products used by farmers are delivered by tank truck from bulk oil plants to their farms. The cooperative salesman or deliveryman is therefore an important link in performing this function. He is the one the farmer contacts and relies upon for service.

Gallons of Fuel Delivered Per Man -- Annually and Monthly

Annual Volumes

The median volume of refined fuels delivered by 92 salesmen in the Eastern general farming area during the 12-month period ended September 30, 1950 was 300,000 gallons, and that of 36 salesmen in the Western wheat farming area was 313,000 gallons. Eight men in the Eastern area and four in the Western area each delivered over 500,000 gallons. The high volume in the East was 828,088 gallons and that in the West was 548,701 gallons. Table 1 and figures 2 and 3 show the volume of each man listed under a code number and his ranking in each area. Data on the number distributing specified volumes in each State are included in table 1 in the appendix.

1/ The term "tank truck salesman" is used in this report for brevity and because it is the term used by most associations. Some refer to them, however, as deliverymen, tank truck servicemen, truck driver or operator, driver-salesmen, and farm servicemen.

The variation in volume salesmen distribute is indicated by the following summary:

<u>Gallons</u>	<u>Eastern area</u>	<u>Western area</u>
	<u>Number of salesmen</u>	
Less than 100,000	3	0
100,000 to 199,999	11	5
200,000 to 299,999	32	8
300,000 to 399,999	25	15
400,000 to 499,999	13	5
500,000 to 599,999	4	3
More than 600,000	4	0
Total	92	36

	<u>Gallons</u>	
Average	321,401	319,806
Median	300,000	313,000
Range	828,088 to 61,840	548,701 to 156,076
Volume exceeded by highest 25 percent of salesmen	326,000	378,000

The proportion of the farm business which salesmen estimated they handled in their territories ranged from 20 to 90 percent. Many of the large volume men believed they had from 50 to 75 percent of the potential liquid fuel volume used on farms in their territory.

The annual volume of fuel delivered by a salesman has been increasing each year as farmers used more fuel, and as larger tank trucks with mechanical unloading equipment and larger farm storage tanks were obtained. Several associations indicated that two men were now delivering as much and often more fuel than three did a few years ago. Others said their volume had doubled during the last 10 years.

The operations of the Farm Service Cooperative, Harlan, Iowa, illustrate the change that has occurred since 1937. During that year it had 11 salesmen and trucks that delivered 1,093,669 gallons, or an average of about 100,000 gallons each. In 1950, the association had eight salesmen who delivered a total of 2,695,628 gallons, or an average of 325,000 gallons each. And delivery costs averaged 1.55 cents a gallon in 1950 compared to 1.90 cents in 1937.

The data obtained in this study indicated that a desirable standard of performance for a salesman in both areas would be deliveries of 400,000 gallons of refined fuels annually. Approximately 25 percent of the salesmen in each area exceeded this volume in 1949-50. Only

FIGURE 2
VOLUME OF FUEL DELIVERED BY 92 SALESMEN DURING 1949-50
BY TYPES OF PATRONS



FIGURE 3

VOLUME OF FUEL DELIVERED BY 36 SALESMEN DURING 1949-50 BY TYPES OF PATRONS

WESTERN AREA



Table 1. - Annual volumes of fuel delivered by 128 salesmen of cooperatives in the Eastern and Western areas served by Consumers Cooperative Association, Kansas City, Mo. during the 12-month period ended September 30, 1950 (arranged from high to low)

Code number of salesmen	Total gallons delivered	Gallons delivered to:		
		Farmers (rural)	Non-farmers ¹ (city-mostly)	Stations and dealers (resale)
Eastern Area				
Iowa 11a-----	828,088	674,827	153,261	-
S.D. 4a-----	738,433	574,093	45,322	119,018
4b-----	738,433	574,093	45,321	119,019
Iowa 5a-----	665,895	608,541	57,354	-
S.D. 2b-----	579,930	473,595	52,435	53,900
Iowa 4h-----	523,758	378,678	38,785	106,295
5c-----	504,575	465,408	39,167	-
S.D. 2a-----	500,011	407,538	31,879	60,594
1b-----	494,733	389,781	89,952	15,000
1f-----	480,279	350,948	129,331	-
Iowa 3c-----	464,287	453,431	10,856	-
8c-----	459,879	337,219	66,533	56,127
6a-----	459,457	410,946	48,511	-
10a-----	458,861	298,196	97,055	63,610
10b-----	454,219	331,702	117,947	4,570
Mo. 1a-----	450,836	184,960	141,589	124,287
5c-----	445,667	270,111	163,220	12,336
Iowa 4d-----	425,643	324,311	101,332	-
Mo. 6d-----	416,968	338,222	33,192	45,554
Nebr. 5a-----	415,315	355,104	24,211	36,000
Kans. 20a-----	400,000	355,000	8,000	37,000
Iowa 12d-----	388,945	327,441	21,914	39,590
4b-----	388,507	241,498	86,502	60,507
Average-----	507,944	396,767	64,937	46,240
Percent of total-----	100.0	78.1	12.8	9.1
23 men = Upper one-fourth				
Iowa 7a-----	383,858	376,349	7,509	-
1c-----	381,722	369,351	12,371	-
4a-----	375,643	257,812	117,384	447
4c-----	370,179	187,442	181,577	1,160
12i-----	363,696	295,799	19,877	48,020
Nebr. 2e-----	363,647	312,444	9,203	42,000
Mo. 6a-----	354,277	241,365	37,492	7,420
Iowa 1b-----	351,995	340,585	11,410	-
3b-----	349,746	327,259	7,487	15,000
8y-----	348,765	289,260	29,505	30,000
8e-----	344,511	240,857	25,652	78,002
S.D. 1c-----	335,881	314,583	21,298	-
1a-----	334,847	241,351	78,496	15,000
Iowa 1e-----	330,441	316,724	13,717	-
1a-----	326,641	316,056	10,585	-
Mo. 1c-----	321,574	222,041	13,798	85,735
Iowa 1f-----	319,039	311,100	7,939	-
2a-----	318,275	297,274	5,207	15,794
10e-----	317,923	214,411	69,442	34,070
Kans. 22a-----	317,500	313,500	3,000	1,000
Iowa 3a-----	315,737	291,363	6,874	17,500
Nebr. 3a-----	315,401	240,833	24,568	50,000
Mo. 1b-----	304,054	178,257	-	125,797
Average-----	341,102	282,435	30,739	27,928
Percent of total-----	100.0	82.8	9.0	8.2

Table 1. - Annual volumes of fuel delivered by 128 salesmen of cooperatives in the Eastern and Western areas served by Consumers Cooperative Association, Kansas City, Mo. during the 12-month period ended September 30, 1950 (arranged from high to low) - continued

Code number of salesmen	Total gallons delivered	Gallons delivered to:		
		Farmers (rural)	Non-farmers ¹ (city-mostly)	Stations and dealers (resale)
Nebr. 1a-----	299,018	223,872	3,008	72,138
Iowa 8f-----	295,991	272,736	5,255	18,000
1d-----	294,212	281,999	12,213	-
Mo. 4a-----	286,285	166,444	119,841	-
Kans. 19b-----	285,387	209,813	12,426	63,148
Iowa 12c-----	284,384	247,511	26,064	10,809
Mo. 3a-----	² 284,148	186,886	37,259	60,003
3b-----	² 284,148	186,886	37,259	60,003
Iowa 4g-----	284,139	220,639	30,013	33,487
10c-----	284,018	178,397	34,113	71,508
10d-----	284,018	178,397	34,113	71,508
S.D. 3a-----	274,681	225,545	49,136	-
Iowa 8b-----	270,230	266,683	3,547	-
2b-----	265,230	247,730	4,339	13,161
2c-----	265,228	247,728	4,339	13,161
Kans. 21a-----	260,000	260,000	-	-
Iowa 9a-----	252,243	173,181	21,678	57,384
12h-----	241,506	185,636	15,232	40,638
Kans. 17a-----	232,418	225,418	7,000	-
Iowa 8a-----	227,677	178,567	7,199	41,911
Nebr. 2a-----	223,818	195,910	3,908	24,000
4b-----	222,850	219,540	3,310	-
4a-----	220,895	217,480	3,415	-
Average-----	266,197	217,261	20,638	28,298
Percent of total-----	100.0	81.6	7.8	10.6
69 men = Upper three-fourths				
Kans. 19a-----	219,786	149,547	250	69,989
2b-----	217,095	211,452	5,643	-
Iowa 6b-----	214,083	191,868	22,215	-
2d-----	212,183	198,183	3,471	10,529
12g-----	211,371	193,646	17,255	470
S.D. 1e-----	209,119	191,973	17,146	-
Iowa 12e-----	² 204,297	189,780	12,477	2,040
12f-----	² 204,297	189,780	12,477	2,040
Mo. 5a-----	201,802	160,141	28,523	13,138
Iowa 12a-----	199,448	185,444	13,829	175
S.D. 1d-----	185,542	164,996	20,546	-
Mo. 5b-----	184,566	110,631	70,205	3,730
6b-----	173,941	173,941	-	-
Iowa 4f-----	166,331	127,910	38,421	-
8d-----	165,329	143,959	1,949	19,421
Mo. 2b-----	160,577	134,627	20,950	5,000
6c-----	156,706	118,473	7,884	30,349
Iowa 12j-----	152,322	142,383	9,939	-
Mo. 5d-----	128,121	100,721	23,846	3,554
Kans. 20b-----	100,000	95,000	-	5,000
Mo. 2a-----	95,036	71,078	18,958	5,000
Iowa 12b-----	94,555	86,616	7,719	220
4e-----	61,840	46,145	15,695	-
Average-----	170,363	146,882	16,061	7,420
Percent of total-----	100.0	86.2	9.4	4.4
Average - 92 men-----	321,401	260,836	34,299	26,266
Median-----	301,000	241,000	20,000	11,500

Table 1. - Annual volumes of fuel delivered by 128 salesmen of cooperatives in the Eastern and Western areas served by Consumers Cooperative Association, Kansas City, Mo. during the 12-month period ended September 30, 1950 (arranged from high to low) - continued

Code number of salesmen	Total gallons delivered	Gallons delivered to:		
		Farmers (rural)	Non-farmers ¹ (city-mostly)	Stations and dealers (resale)
Western Area -----	548,701			
S.D. 6a6a-----	548,701	349,673	44,250	154,778
6b-----	548,701	349,673	44,250	154,778
Kans. 14a-----	509,977	325,428	53,000	131,549
4a-----	484,051	402,564	6,487	75,000
Okla. 2a-----	457,470	177,968	-	279,502
Kans. 12a-----	444,873	444,873	-	-
10a-----	424,566	388,566	-	36,000
13a-----	406,960	406,960	-	-
S.D. 6c-----	391,073	274,652	-	100,171
Average-----	468,486	346,706	18,249	103,531
Percent of total-----	100.0	74.0	3.9	22.1
9 men = Upper one-fourth				
Okla. 5a-----	366,163	290,271	-	75,892
Kans. 12b-----	362,348	362,348	-	-
S.D. 6d-----	355,231	247,390	14,271	93,570
Kans. 7a-----	339,951	279,779	9,405	50,767
5b-----	318,207	318,207	-	-
8b-----	318,090	184,215	133,875	-
Okla. 3d-----	315,183	315,183	-	-
3c-----	315,099	315,099	-	-
Kans. 15a-----	313,802	287,802	6,000	20,000
Average-----	333,786	288,922	18,172	26,692
Percent of total-----	100.0	86.6	5.4	8.0
18 men = median				
Kans. 15b-----	² 313,801	287,801	6,000	20,000
S.D. 5a-----	312,152	282,152	30,000	-
5b-----	312,152	282,152	30,000	-
Kans. 8a-----	306,640	236,909	19,731	50,000
11a-----	300,000	300,000	-	-
Okla. 3a-----	280,176	280,176	-	-
4a-----	276,746	265,359	-	11,387
Kans. 9a-----	227,861	227,861	-	-
Okla. 1a-----	221,425	221,425	-	-
Average-----	283,439	264,870	9,526	9,043
Percent of total-----	100.0	93.4	3.4	3.2
27 men = Upper three-fourths				
Okla. 1b-----	221,425	221,425	-	-
Kans. 8c-----	221,054	206,385	14,669	-
6a-----	211,654	190,397	1,257	20,000
S.D. 7b-----	209,778	163,511	21,267	25,000
Okla. 1c-----	192,111	192,111	-	-
3b-----	186,779	186,779	-	-
S.D. 7a-----	182,055	138,772	18,283	25,000
Kans. 5a-----	160,682	160,682	-	-
S.D. 5c-----	156,076	141,076	15,000	-
Average-----	193,513	177,904	7,831	7,778
Percent of total-----	100.0	91.9	4.1	4.0
Average - 36 men-----	319,806	269,601	13,444	36,761
Median-----	313,000	281,000	-	-

¹Includes city fuel oil patrons and schools, churches, government and commercial accounts such as construction, saw mill, stone quarry, and dehydration companies.

²Manager estimated that volume of each man was about equal.

about 10 percent in each area exceeded 500,000 gallons. If the entire group of associations surveyed were above average in the area, which was believed to be the case, then a standard of 400,000 gallons would represent a goal for the salesmen of many associations in CCA's territory. 2/

In establishing standards of performance for deliverymen, however, factors other than volume -- such as maintaining good service to patrons, delivering oil and grease and a few other supplies, collecting accounts, and calling on prospective patrons -- must not be overlooked or minimized.

Monthly Volumes

Available data on the monthly volumes of fuel delivered by 83 of the 92 salesmen in the Eastern area showed relatively steady deliveries. They ranged from about 23,000 to 28,000 gallons each month except in January, April and May when they ranged from 29,000 to 32,000 gallons (Table 2 and figure 4). Monthly deliveries by 25 of the 36 salesmen in the Western area were much more seasonable. They ranged from about 16,000 to 25,000 gallons during each of the months from October through May and from 37,000 to 52,000 gallons from June through September (Table 2 and figure 4).

The highest volume delivered during any month in the Eastern area was 104,748 gallons in May, 1950 by a salesman at Rock Valley, Ia. The highest in the Western area was 84,034 gallons in June 1950 by a salesman at Hays, Kans. 3/

2/ By way of comparison, the average volume of 60 deliverymen in 26 cooperatives in the Virginias, Delaware, Maryland, and Kentucky, increased from about 300,000 gallons in 1943-44 to 472,647 gallons per man in 1949-50. Nineteen of the group each delivered more than 500,000 gallons the latter year. The high man had a volume of 626,000 gallons. In Ohio, of about 150 salesmen in 85 county cooperatives, 15 delivered more than 500,000 gallons in 1951. The State wholesale association used 400,000 gallons as an annual quota or goal in 1950.

3/ In quotas established for deliverymen in 1950 by the Farm Bureau Cooperative Association, Columbus, Ohio, a State regional, 40,000 gallons for each of the months of April, May and June was the highest monthly volume used. The lowest was 24,000 gallons for January and February.

Special recognition was given by the Illinois Farm Supply Co., a State regional, to a salesman in that State who delivered 101,376 gallons of liquid fuel during May, 1951. This was an average 4,224 gallons per working day, or four 1,000-gallon loads each day.

FIGURE 4
AVERAGE MONTHLY GALLONAGE OF FUEL
DELIVERED PER SALESMAN, 1949-50

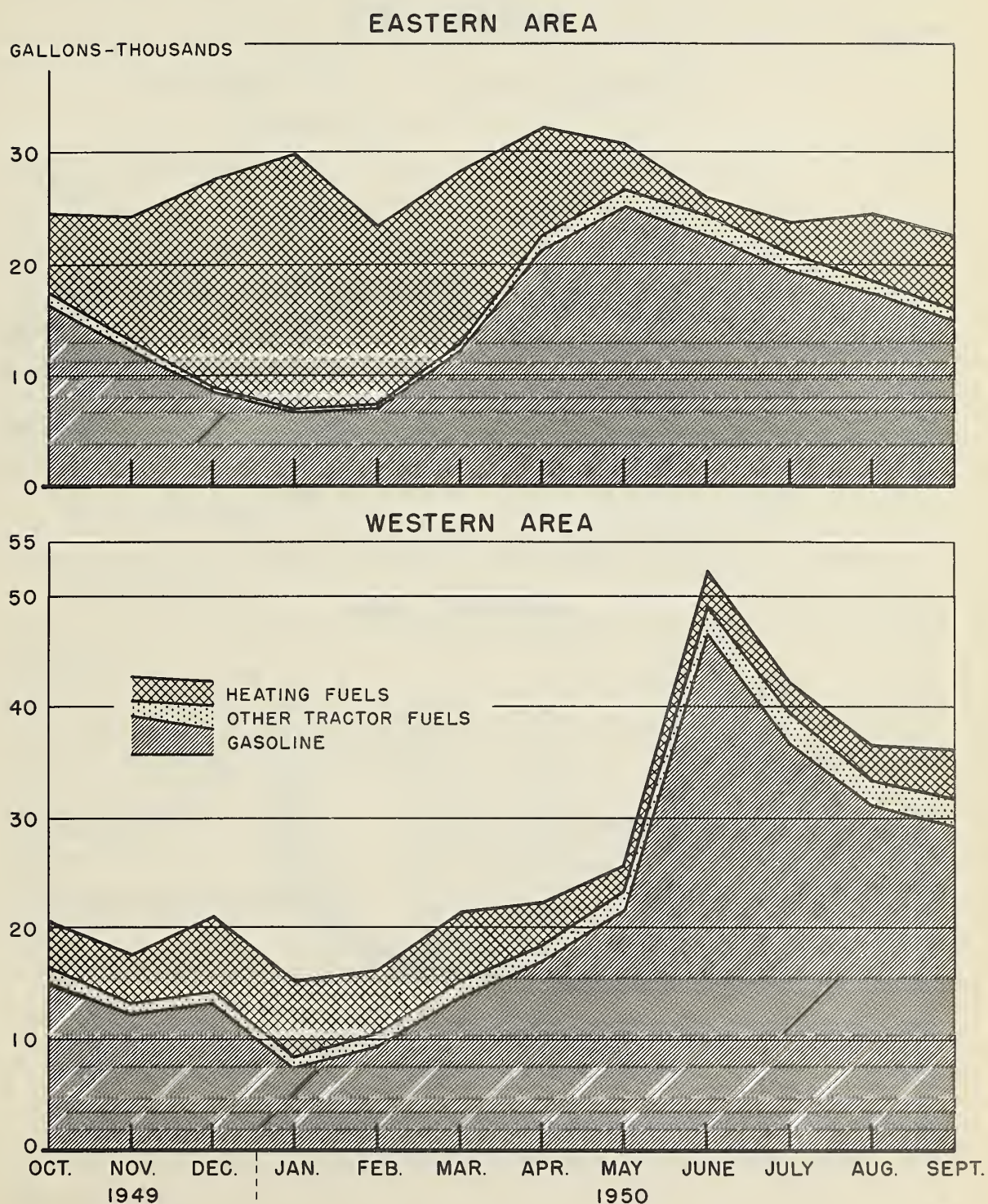
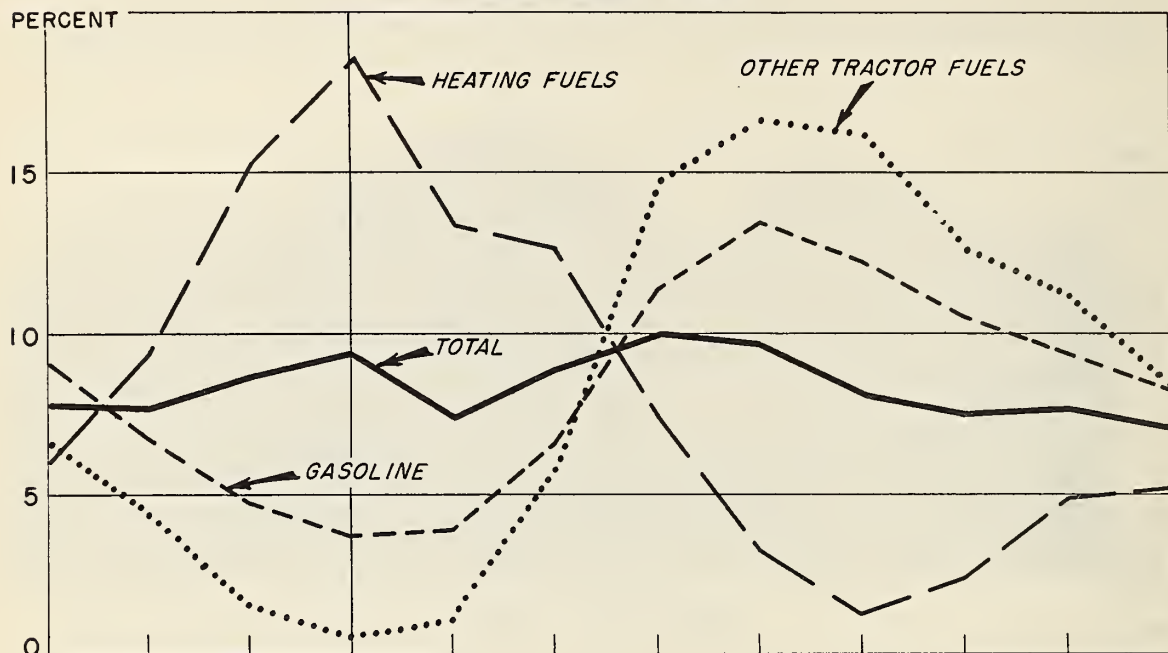


FIGURE 5

PERCENTAGES THAT MONTHLY DELIVERIES WERE OF TOTAL DELIVERIES OF EACH FUEL, BY AREAS, 1949-50

EASTERN AREA



WESTERN AREA

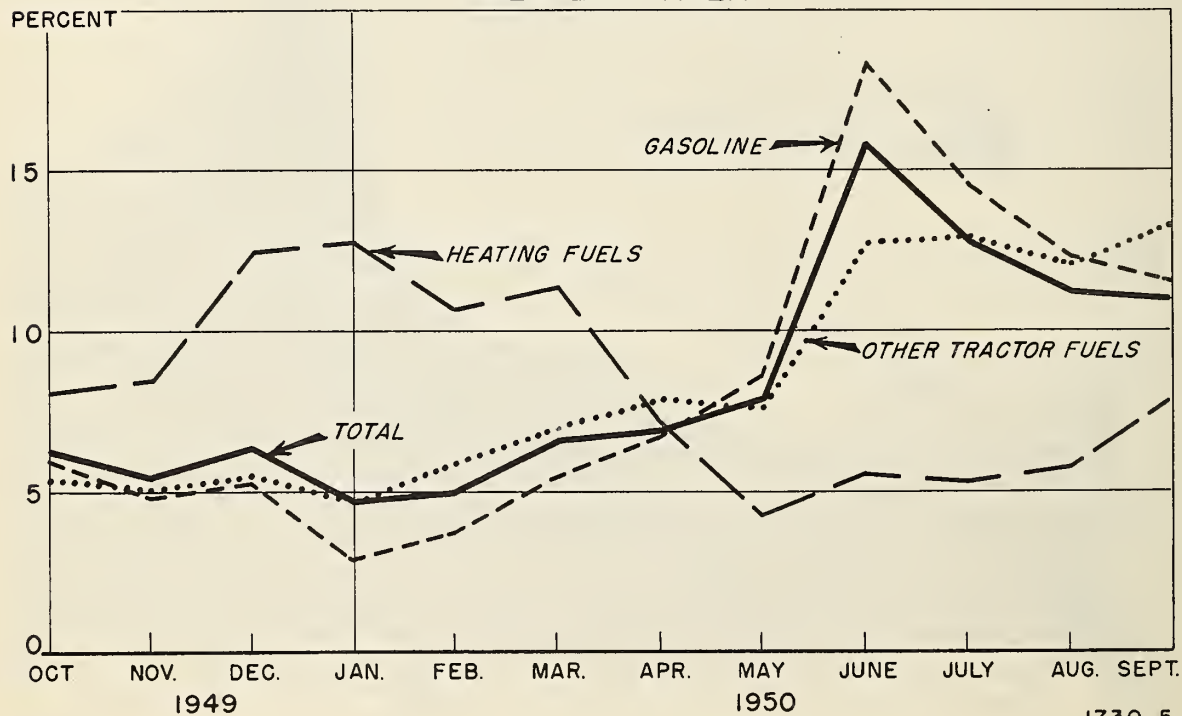


Table 2. - Average monthly gallonage of fuels delivered per salesman in 1949-50, by types and areas (average of those handling or itemizing each product).

Month	Gasoline	Tractor fuel	Diesel fuel	Distillate fuel oil	Kerosene	Total
<i>Gallons</i>						
<u>Eastern area - 83</u> <u>salesmen</u>						
October 1949-----	16,764	952	468	6,751	686	24,921
November-----	12,466	589	582	10,810	858	24,593
December-----	8,764	186	338	17,801	1,200	27,874
January 1950-----	6,960	96	27	21,686	1,345	29,984
February-----	7,166	170	50	15,542	1,019	23,797
March-----	12,213	835	395	14,493	1,246	28,543
April-----	21,015	2,264	373	8,136	1,193	32,075
May-----	24,900	2,516	585	3,203	880	30,858
June-----	22,580	2,439	597	1,078	539	26,036
July-----	19,504	1,866	643	2,575	455	23,963
August-----	17,406	1,644	700	5,545	532	24,752
September-----	15,300	1,235	515	5,800	617	22,655
Total ¹ -----	185,128	14,792	5,273	113,420	10,570	320,051
No itemizing each fuel-	83	61	11	83	78	83
Weighted average						
(83)-----	185,128	10,871	699	113,420	9,933	320,051
<u>Western area - 25</u> <u>salesmen</u>						
October 1949-----	15,159	685	1,411	5,771	1,626	20,685
November-----	12,157	417	1,451	5,913	1,782	17,820
December-----	13,176	236	1,701	9,175	2,396	21,161
January 1950-----	7,478	337	1,389	9,141	2,621	15,493
February-----	9,415	902	1,437	7,422	2,297	16,483
March-----	13,943	1,250	1,625	7,563	2,673	21,653
April-----	17,125	2,267	1,317	4,666	1,709	22,662
May-----	21,928	2,266	1,214	3,166	833	25,851
June-----	46,457	4,079	1,857	3,555	1,372	52,095
July-----	36,751	4,211	1,822	3,556	1,210	42,274
August-----	31,097	3,916	1,746	3,516	1,536	36,734
September-----	29,279	4,228	1,952	5,951	1,332	36,239
Total ¹ -----	253,966	24,794	18,922	69,395	21,387	329,150
No itemizing each fuel-	25	9	15	13	22	25
Weighted average						
(25)-----	253,966	8,926	11,353	36,085	18,820	329,150

¹The totals for each fuel will add to more than the total of all fuels because they are based on those salesmen handling or itemizing each fuel.

Table 3. - Percentages that monthly deliveries were of total deliveries of each fuel in 1949-50

Month	Gasoline	Other motor fuels	Heating fuels	Total fuels
<i>Percent</i>				
<u>Eastern Area</u>				
October 1949-----	9.1	6.6	6.0	7.8
November-----	6.7	4.4	9.4	7.7
December-----	4.7	1.6	15.3	8.7
January 1950-----	3.7	0.6	18.6	9.4
February-----	3.9	1.1	13.4	7.4
March-----	6.6	5.8	12.7	8.9
April-----	11.4	14.8	7.5	10.0
May-----	13.5	16.7	3.3	9.7
June-----	12.2	16.2	1.3	8.1
July-----	10.5	12.6	2.4	7.5
August-----	9.4	11.2	4.9	7.7
September-----	8.3	8.4	5.2	7.1
Total-----	100.0	100.0	100.0	100.0
<u>Western Area</u>				
October 1949-----	6.0	5.4	8.1	6.3
November-----	4.8	5.0	8.5	5.4
December-----	5.2	5.5	12.5	6.4
January 1950-----	2.9	4.7	12.8	4.7
February-----	3.7	5.9	10.7	5.0
March-----	5.5	7.0	11.4	6.6
April-----	6.7	7.9	7.2	6.9
May-----	8.6	7.6	4.3	7.9
June-----	18.3	12.7	5.6	15.8
July-----	14.5	12.9	5.3	12.8
August-----	12.3	12.1	5.8	11.2
September-----	11.5	13.3	7.8	11.0
Total-----	100.0	100.0	100.0	100.0

Percentage-wise, fuel deliveries in the Eastern area represented from 7 percent of the total in September to 10 percent in April, and in the Western area the range was from about 5 percent in January to 16 percent of the total in June (Table 3 and figure 5). The high volume month of salesmen in the Eastern area was only about 50 percent larger than the smallest month, while in the West the high month was over three times larger than the smallest month. Although these monthly deliveries vary among salesmen within the same association and from year to year because of weather conditions, they should serve as useful guides in establishing quotas or goals for delivery operations of salesmen.

Monthly quotas of fuel based on the suggested annual volumes are indicated in the table after the summary on page . Various factors influencing annual and monthly deliveries per man are discussed in other sections of this report.

Farm, Nonfarm, and Station Volume Delivered Per Man -- Annually

Available data on types of patrons or destination of deliveries, much of which were estimates, indicated that this was an important factor in the amount of fuel delivered by each salesman on the basis of amounts to farmers, nonfarmers, and service stations.

Farm Volume

Information on 92 salesmen in the Eastern area and 36 in the Western area showed that each delivered similar volumes of fuel to farmers, and that this volume represented 81 percent of the total in the Eastern and 84 percent in the Western area (figure 6 and table 4). Gasoline volume to farms, however, was about 40,000 gallons per man less in the Eastern area but heating oil volume was about 35,000 gallons per man more. Other tractor fuel volume was also smaller in the Eastern area.

Farm deliveries in the Eastern area ranged from 46,146 to 674,827 gallons per salesman with the median 241,000 and the average 260,836 gallons (Table 4). One-fourth of the men exceeded 320,000 gallons. In the Western area, farm deliveries ranged from 138,772 to 444,873 gallons with the median 281,000 and the average 269,601 gallons. One-fourth exceeded 316,000 gallons.

Farm deliveries of 320,000 gallons in the Eastern area and 340,000 gallons in the Western area would therefore appear to be desirable standards. They would be about 81 and 84 percent of the suggested standard of 400,000 gallons for total fuels for the respective areas.

Nonfarm Volume

Deliveries to nonfarmers -- mostly fuel oil to city patrons and schools, churches, and a little gasoline to highway departments and

Table 4. - Average gallonage of fuels delivered per salesman to farmers, non-farmers, and stations and dealers during year ended September 30, 1950, by areas

	To farmers		To non-farmers (mostly city patrons)		To stations and dealers		Total	
	Gallons	Percent	Gallons	Percent	Gallons	Percent	Gallons	Percent ¹
Eastern area - 92 salesmen								
Gasoline-----	162,884	85.6	21,315	0.7	26,019	13.7	190,218	59.2
Tractor fuel-----	11,333	100.0	0	0	0	0	11,333	3.5
Diesel fuel-----	766	100.0	0	0	0	0	766	.2
Other motor fuels-----	12,099	100.0	0	0	0	0	12,099	3.7
Kerosene-----	8,976	92.9	689	7.1	0	0	9,665	3.0
Distillate fuel oil-----	76,877	70.3	32,295	29.5	247	0.2	109,419	34.1
Total heating fuels-----	85,853	72.1	32,984	27.7	247	0.2	119,084	37.1
Total fuels-----	260,836	81.2	34,299	10.7	26,266	8.1	321,401	100.0
Western area - 36 salesmen								
Gasoline-----	201,534	85.0	32,500	1.0	33,107	14.0	237,141	74.0
Tractor fuel-----	11,431	100.0	0	0	0	0	11,431	3.6
Diesel fuel-----	6,867	80.5	31,666	19.5	0	0	8,533	2.6
Other motor fuels-----	18,298	91.3	31,666	8.3	0	0	19,964	6.2
Kerosene-----	15,477	97.9	337	2.1	0	0	15,814	4.9
Distillate fuel oil-----	34,292	73.1	8,941	19.1	3,654	7.8	46,887	14.9
Total heating fuels-----	49,769	79.4	9,278	14.8	3,654	5.8	62,701	19.8
Total fuels-----	269,601	84.3	13,444	4.2	36,761	11.5	319,806	100.0

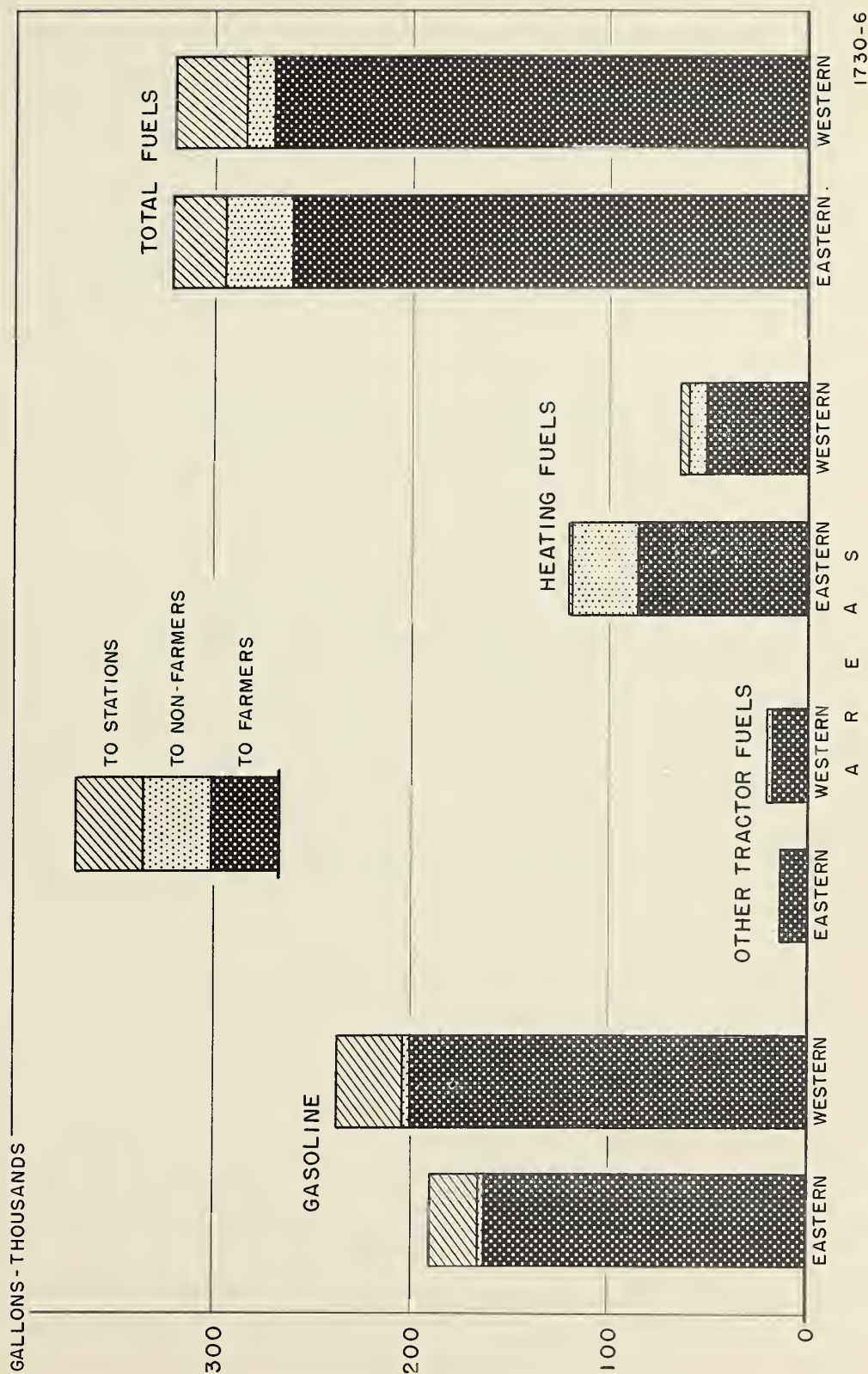
¹This column shows the percentage that each fuel was of the total gallonage.

²Average of all salesmen but only two had deliveries.

³Average of all salesmen but only one had deliveries.

FIGURE 6

AVERAGE GALLONAGE OF FUELS DELIVERED PER SALESMAN IN 1949-50, BY TYPES OF PATRONS, FUELS, AND AREAS



truckers -- averaged 33,094 gallons per salesman, or 10.3 percent of the total in the Eastern area (Table 2). They averaged only 13,444 gallons or 4.2 percent of the total in the Western area (Figure 6). Most of this volume was heating fuels in both areas of which 27.7 percent in the Eastern and only 14.8 percent in the Western area went to nonfarmers. Thus, fuel oil to city patrons was largely responsible for the greater total winter volume per salesman in the Eastern area, and also for the fact that annual total deliveries of fuel by these salesmen were equal to those in the Western area.

The range in nonfarm deliveries was from none to 181,577 gallons per salesman in the Eastern area with the median 20,000 gallons. One-fourth exceeded 38,600 gallons. In the Western area, the range was from none to 138,875 gallons. One-fourth of the group had above 16,800 gallons, but only about one-half of the salesmen had deliveries to nonfarmers.

These data indicate that a volume of about 50,000 gallons in the Eastern area and 20,000 gallons in the Western area might be desirable standards for nonfarm volume. They would represent about 12 and 5 percent, respectively, of a total of 400,000 gallons of all fuels.

Station and Dealer Volume

Deliveries to stations and dealers such as garages and stores with curb pumps were practically all gasoline and averaged 26,266 gallons or 8.1 percent of the total by Eastern salesmen (Table 4). They averaged 36,761 gallons, or 11.5 percent of the total, in the Western area (Figure 6). The range was from none to 234,410 gallons per man in the East with the median 11,500 gallons. One-fourth of the men exceeded 46,500 gallons. In the Western area the range was from none to 279,502 gallons per man, but only one-half had deliveries of this type.

The importance of station volume is more evident when the performance of the salesmen who delivered gasoline to stations is compared with those who did not have such deliveries.

	<u>Eastern Area</u>		<u>Western Area</u>	
	Salesmen with stations	Salesmen without stations	Salesmen with stations	Salesmen without stations
<u>Gasoline deliveries to:</u>				
		<u>Gallons</u>		
Stations and dealers	58,669	1/ 4,052	92,038	1/ 3,647
Other patrons	187,771	148,345	169,053	221,518
Total	246,440	152,397	261,091	225,165

1/ Consists of deliveries to garages and stores with curb pumps.

Thirty-seven Eastern salesmen serving stations had an average gasoline volume of 246,440 gallons compared with 152,397 gallons by those not serving stations. This was a difference of 94,043 gallons of which station deliveries accounted for 58,669 gallons.

In the Western area 12 salesmen delivering to stations had a gasoline volume averaging 261,091 gallons compared with 225,165 gallons by those without stations. This was a difference of 35,926 gallons but their station deliveries averaged 92,038 gallons per man.

These data further indicate that in the Eastern area the salesmen serving stations not only had larger total gasoline volumes, but larger gasoline deliveries to other patrons. Salesmen in the Western area delivering to stations, however, had somewhat smaller deliveries to other patrons than those salesmen with no stations.

Standards of 30,000 gallons per salesman in the Eastern area, or 7.5 percent of the total, and 40,000 gallons in the West, or 10 percent of the total, are suggested.

Types of Fuel Delivered Per Man --- Annually and Monthly

Annual Volume by Types

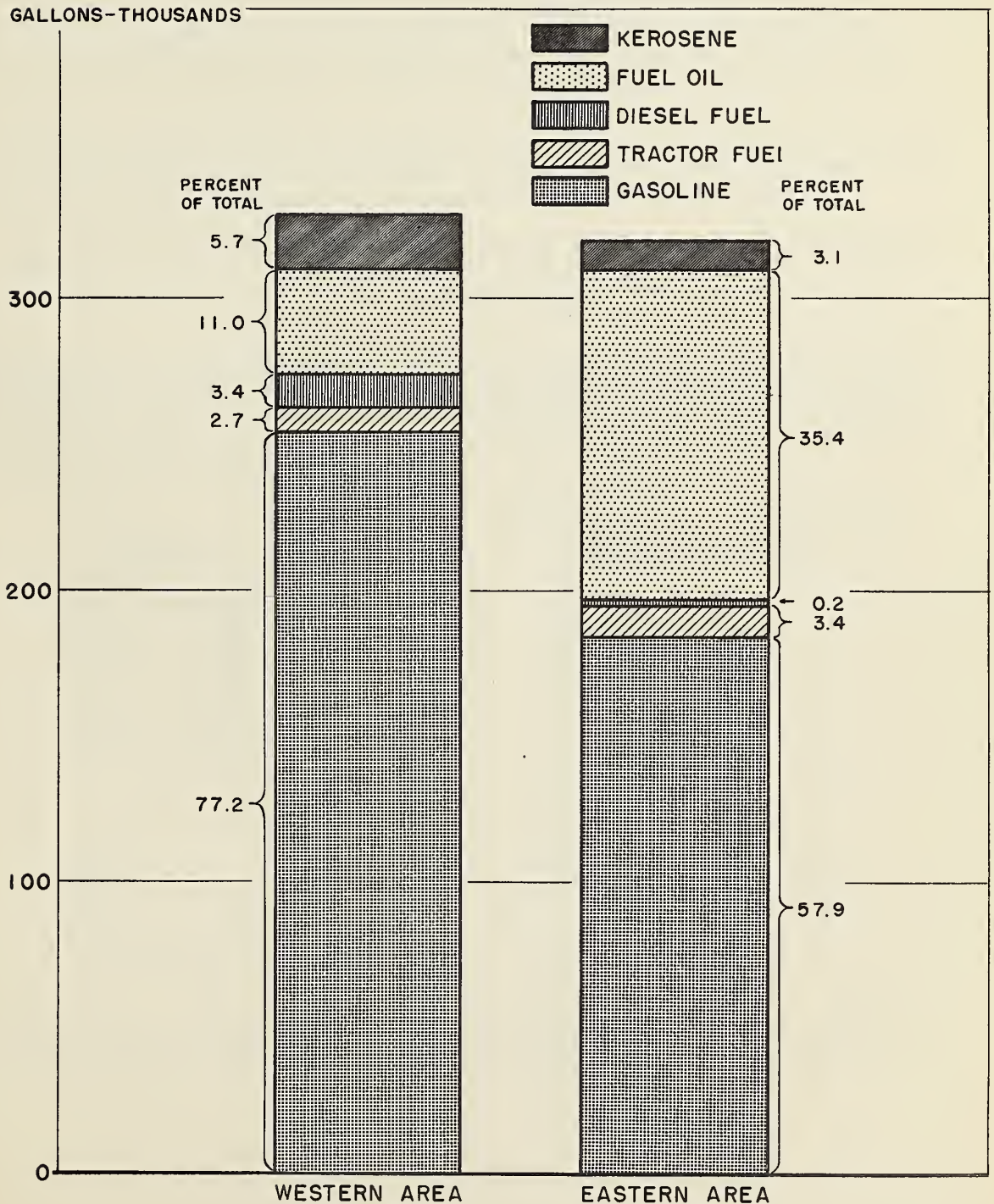
Considerable variation existed among the salesmen both within an area and between areas in the proportion of each fuel delivered depending on such factors as the amount of service station gasoline and nonfarm oil business. The proportions of gasoline, kerosene, and diesel fuel were higher in the Western than in the Eastern area, but fuel oil constituted a much larger percentage in the East (Table 4 and figure 7).

Gasoline deliveries in the Western area averaged 237,141 gallons a man, which was 74 percent of the total fuel, compared with 190,218 gallons, or 59.2 percent of the total, in the East. The deliveries of tractor fuels were about the same in both areas -- around 11,000 gallons a man. Kerosene volume averaged about 16,000 gallons a man in the West compared with 10,000 gallons in the East. Diesel volume averaged 8,500 gallons a man in the West compared with only 766 gallons in the Eastern area. But deliveries of fuel oil averaged 109,000 gallons a man and constituted 34.1 percent of the total in the Eastern area compared with 48,000 gallons a man, or 14.9 percent of the total, in the West. However, the volumes of those actually handling or itemizing tractor fuel and fuel oil were somewhat above these amounts (Table 2).

If 400,000 gallons of total fuel is used as a standard, than the motor fuel standard in the Eastern area might be 250,000 gallons as it represented 62.9 percent of the total delivered in 1949-50. In the Western area, however, it represented 80.2 percent of the total which would result in a standard of 320,000 gallons for motor fuel there.

FIGURE 7

AVERAGE ANNUAL GALLONAGE OF LIQUID FUELS DELIVERED PER SALESMAN IN 1949-50 BY TYPES OF FUELS AND AREAS



Monthly Volumes by Types

The importance of fuel oil in the Eastern area is especially evident when viewed from the standpoint of monthly operations (Table 2 and figures 4 and 5). It constituted more than half the total deliveries from November to March, inclusive, thus practically leveling out the decline in volume which would have occurred if only gasoline and other motor fuels had been handled.

In the Western area, fuel oil helped to bring up volume during the fall and winter months, but it was much less important than in the East. It constituted half of the volume in only the month of January, and represented about a third of the volume in December, February and March.

A larger proportion of the gasoline, diesel and tractor fuel volume was delivered in the spring in the Eastern area. Such deliveries were heaviest from June to September, inclusive, in the Western area.

Gallons of Lubricating Oil Delivered Per Man -- Annually and Monthly

Annual Volumes

Deliveries of lubricating oil by 86 salesmen in the Eastern area showed a median of 2,400 gallons per man. The median of 23 salesmen in the Western area was 3,943 gallons in 1949-50 (Table 5). There was a wide variation, however, in the volume of salesmen in both areas as indicated by the following summary:

Volume delivered (Gallons)	<u>Eastern Area</u>	<u>Western Area</u>
	<u>Number of</u>	<u>salesmen</u>
Less than 1,000	10	1
1,000 to 1,999	22	3
2,000 to 2,999	24	4
3,000 to 3,999	19	4
4,000 to 4,999	7	7
5,000 to 5,999	3	0
6,000 and over	1	4
Total	86	23
Average	2,545	Gallons 3,723
Median	2,400	3,943
Range	60 to 7,357	356 to 6,935
Volume exceeded by highest 25 percent of salesmen	3,500	6,000

Deliveries of lubricating oil per 100 gallons of motor fuel (gasoline, tractor fuel, and diesel fuel) show that the median was 1.3 gallons in the Eastern area and 1.4 gallons in the Western area (Table 5).

The number of salesmen with various ratios was as follows:

<u>Ratio of lube oil to motor fuel</u> <u>(Gallons)</u>	<u>Eastern Area</u>	<u>Western Area</u>
	<u>Number of salesmen</u>	
Less than 1 per 100	17	5
1 - 1.29 per 100	19	4
1.3 - 1.49 per 100	21	1
1.5 - 1.99 per 100	21	7
2.0 - more per 100	5	3
Total	83	20

	<u>Ratio (gallons)</u>	
Average (weighted)	1.23	1.42
Median	1.3	1.4
Range	0.1 to 2.4	0.2 to 3.2
Ratio exceeded by highest 25 percent of salesmen	1.6	1.7

The percentage of oil booked in the fall for later delivery varied from none to 90 percent, but most salesmen booked from 25 to 50 percent of their annual volume.

In establishing standards of performance for salesmen, a balanced program of deliveries of refined fuels, motor oils, and grease should be considered as well as soliciting new patrons and collecting accounts receivable. Also, some cooperatives may expect the salesmen to give attention to other items such as tires, batteries, anti-freeze, fly spray, and paint. If the standard or sales incentive for any one product is too high the others may suffer.

If a standard of 250,000 gallons of motor fuels per man in the Eastern area and 320,000 gallons per man in the Western area is used, it might be expected that lube oil volume would be somewhat in proportion. On the basis of the median lube oil-motor fuel ratio of 1.3, the oil volume would be 3,250 gallons in the Eastern and 4,160 gallons in the Western area. If the ratio exceeded by the highest 25 percent is used, that is, 1.6 percent, the oil volume would be 4,000 gallons in the East and 5,120 gallons in the West. These latter volumes should be reasonable as they would be somewhat larger than the 3,500 gallons exceeded by the high 25 percent of the Eastern salesmen; but less than the 6,000 gallons exceeded by the high 25 percent in the Western area.

In adopting standards of performance, however, consideration should be given to the type of patrons supplied. If gasoline and motor oil are delivered to service stations and other dealers, the ratio should probably be higher than 1.5 to 100. If they are supplied with only gasoline, it should be lower. Also, the amount of oil sold to highway departments and commercial firms would cause variation among salesmen.

Table 5. - Gallons of lubricating oil delivered by salesmen of cooperatives during year ended September 30, 1950 (arranged from high to low)

Code number of salesmen	Gallons of lubricating oil	Ratio of gallons of lube oil to gallons of motor fuel	Code number of salesmen	Gallons of lubricating oil	Ratio of gallons of lube oil to gallons of motor fuel
Eastern Area			S.D. 1e-----	1,806	1.4
Mo. 1a-----	7,357	2.1	Mo. 2b-----	1,777	1.8
Iowa 10c-----	5,171	1.3	Iowa 8f-----	1,720	0.9
S.D. 2b-----	5,138	1.3	Neb. 2b-----	1,634	1.2
Kans. 22a-----	5,000	1.9	64 men = Upper three-fourths		
Iowa 5a-----	4,645	1.3	Iowa 2d-----	1,598	1.1
8c-----	4,541	1.6	S.D. 3a-----	1,597	0.9
S.D. 4a-----	4,130	0.8	1d-----	1,588	1.6
4b-----	4,130	0.8	Iowa 6b-----	1,505	1.2
1b-----	4,125	1.4	12j-----	1,414	1.4
Iowa 7a-----	4,039	1.7	Mo. 6b-----	1,341	1.8
Mo. 1b-----	4,027	1.7	Iowa 4a-----	1,328	0.8
Iowa 4h-----	3,973	1.0	4b-----	1,299	0.5
Nebr. 3a-----	3,946	1.7	12c-----	1,283	0.9
Iowa 8e-----	3,923	1.9	12b-----	1,250	2.4
S.D. 1f-----	3,867	1.4	Mo. 2a-----	1,116	2.1
Iowa 6a-----	3,778	1.5	6a-----	1,028	0.5
S.D. 2a-----	3,746	1.2	Iowa 12a-----	966	0.8
Nebr. 4a-----	3,639	2.2	Mo. 5d-----	957	1.3
2a-----	3,579	2.1	Kans. 19a-----	779	0.7
5a-----	3,555	1.2	Mo. 5b-----	725	1.9
Iowa 12d-----	3,367	1.3	Iowa 4c-----	678	0.6
21 men = Upper one-fourth			Mo. 6c-----	529	0.6
Nebr. 2e-----	3,298	1.4	Iowa 4e-----	485	1.3
Iowa 1e-----	3,261	1.8	4f-----	461	0.5
10d-----	3,245	1.9	Mo. 5c-----	346	0.1
Nebr. 4b-----	3,238	1.8	Iowa 8g-----	60	0.1
Iowa 1c-----	3,222	1.3	Average (86 men)---		
5c-----	3,216	1.1	Median-----		
12i-----	3,169	1.2	Western Area		
11a-----	3,132	0.7	Kans. 8a-----	6,935	1.5
8a-----	3,067	1.9	8b-----	6,935	1.5
1b-----	2,971	1.3	7a-----	6,442	2.6
1d-----	2,904	1.1	6a-----	6,102	3.2
12l-----	2,877	1.8	4a-----	4,500	1.1
1a-----	2,756	1.3	Okla. 3d-----	4,403	1.6
Iowa 12e-----	2,754	1.0	Kans. 13a-----	4,361	1.2
Mo. 1c-----	2,736	1.2	15a-----	4,212	1.8
Iowa 8b-----	2,598	1.3	15b-----	4,212	1.8
Kans. 19b-----	2,515	1.6	Okla. 1a-----	4,000	2.0
Mo. 3a-----	2,426	1.4	1b-----	4,000	2.0
3b-----	2,426	1.4	10a-----	3,943	1.1
Iowa 3b-----	2,417	1.3	43 men = Median		
9a-----	2,404	1.4	Iowa 2a-----	2,398	1.1
43 men = Median			3c-----	2,344	1.0
Iowa 2a-----	2,398	1.1	Mo. 5a-----	2,328	1.8
3c-----	2,344	1.0	S.D. 1c-----	2,323	1.0
Mo. 5a-----	2,328	1.8	Mo. 6d-----	2,314	0.9
S.D. 1c-----	2,323	1.0	Iowa 3a-----	2,289	1.4
Mo. 6d-----	2,314	0.9	4g-----	2,281	1.3
Iowa 3a-----	2,289	1.4	1f-----	2,226	1.0
4g-----	2,281	1.3	8d-----	2,108	1.9
1f-----	2,226	1.0	10b-----	2,086	1.0
8d-----	2,108	1.9	10a-----	2,082	0.8
10b-----	2,086	1.0	2b-----	1,998	1.1
10a-----	2,082	0.8	2c-----	1,998	1.1
2b-----	1,998	1.1	S.D. 1a-----	1,972	1.1
2c-----	1,998	1.1	Nebr. 1a-----	1,962	0.9
S.D. 1a-----	1,972	1.1	Iowa 12g-----	1,925	1.6
Nebr. 1a-----	1,962	0.9	4d-----	1,902	0.9
Iowa 12g-----	1,925	1.6	12 men = Median		
4d-----	1,902	0.9	Okla. 8c-----	3,520	2.1
12 men = Median			1c-----	3,446	2.0
Iowa 2a-----	2,398	1.1	3c-----	3,152	1.1
3c-----	2,344	1.0	3b-----	2,905	1.8
Mo. 5a-----	2,328	1.8	S.D. 7b-----	2,800	1.7
S.D. 1c-----	2,323	1.0	Kans. 12b-----	2,501	0.9
Mo. 6d-----	2,314	0.9	5b-----	2,138	0.7
Iowa 3a-----	2,289	1.4	S.D. 7a-----	1,945	1.4
4g-----	2,281	1.3	Kans. 14a-----	1,365	0.4
1f-----	2,226	1.0	5a-----	1,121	0.8
8d-----	2,108	1.9	Okla. 2a-----	690	0.2
10b-----	2,086	1.0	Average (23 men)---		
10a-----	2,082	0.8	Median-----		
2b-----	1,998	1.1	43 men = Median		
2c-----	1,998	1.1	Iowa 2a-----	2,398	1.1
S.D. 1a-----	1,972	1.1	3c-----	2,344	1.0
Nebr. 1a-----	1,962	0.9	Mo. 5a-----	2,328	1.8
Iowa 12g-----	1,925	1.6	S.D. 1c-----	2,323	1.0
4d-----	1,902	0.9	Mo. 6d-----	2,314	0.9
12 men = Median			Iowa 3a-----	2,289	1.4
Iowa 2a-----	2,398	1.1	4g-----	2,281	1.3
3c-----	2,344	1.0	1f-----	2,226	1.0
Mo. 5a-----	2,328	1.8	8d-----	2,108	1.9
S.D. 1c-----	2,323	1.0	10b-----	2,086	1.0
Mo. 6d-----	2,314	0.9	10a-----	2,082	0.8
Iowa 3a-----	2,289	1.4	2b-----	1,998	1.1
4g-----	2,281	1.3	2c-----	1,998	1.1
1f-----	2,226	1.0	S.D. 1a-----	1,972	1.1
8d-----	2,108	1.9	Nebr. 1a-----	1,962	0.9
10b-----	2,086	1.0	Iowa 12g-----	1,925	1.6
10a-----	2,082	0.8	4d-----	1,902	0.9
2b-----	1,998	1.1	12 men = Median		
2c-----	1,998	1.1	Okla. 8c-----	3,520	2.1
S.D. 1a-----	1,972	1.1	1c-----	3,446	2.0
Nebr. 1a-----	1,962	0.9	3c-----	3,152	1.1
Iowa 12g-----	1,925	1.6	3b-----	2,905	1.8
4d-----	1,902	0.9	S.D. 7b-----	2,800	1.7
12 men = Median			Kans. 12b-----	2,501	0.9
Iowa 2a-----	2,398	1.1	5b-----	2,138	0.7
3c-----	2,344	1.0	S.D. 7a-----	1,945	1.4
Mo. 5a-----	2,328	1.8	Kans. 14a-----	1,365	0.4
S.D. 1c-----	2,323	1.0	5a-----	1,121	0.8
Mo. 6d-----	2,314	0.9	Okla. 2a-----	690	0.2
Iowa 3a-----	2,289	1.4	Average (23 men)---		
4g-----	2,281	1.3	Median-----		
1f-----	2,226	1.0	43 men = Median		
8d-----	2,108	1.9	Iowa 2a-----	2,398	1.1
10b-----	2,086	1.0	3c-----	2,344	1.0
10a-----	2,082	0.8	Mo. 5a-----	2,328	1.8
2b-----	1,998	1.1	S.D. 1c-----	2,323	1.0
2c-----	1,998	1.1	Mo. 6d-----	2,314	0.9
S.D. 1a-----	1,972	1.1	Iowa 3a-----	2,289	1.4
Nebr. 1a-----	1,962	0.9	4g-----	2,281	1.3
Iowa 12g-----	1,925	1.6	1f-----	2,226	1.0
4d-----	1,902	0.9	8d-----	2,108	1.9
12 men = Median			10b-----	2,086	1.0
Iowa 2a-----	2,398	1.1	10a-----	2,082	0.8
3c-----	2,344	1.0	2b-----	1,998	1.1
Mo. 5a-----	2,328	1.8	2c-----	1,998	1.1
S.D. 1c-----	2,323	1.0	S.D. 1a-----	1,972	1.1
Mo. 6d-----	2,314	0.9	Nebr. 1a-----	1,962	0.9
Iowa 3a-----	2,289	1.4	Iowa 12g-----	1,925	1.6
4g-----	2,281	1.3	4d-----	1,902	0.9
1f-----	2,226	1.0	12 men = Median		
8d-----	2,108	1.9	Okla. 8c-----	3,520	2.1
10b-----	2,086	1.0	1c-----	3,446	2.0
10a-----	2,082	0.8	3c-----	3,152	1.1
2b-----	1,998	1.1	3b-----	2,905	1.8
2c-----	1,998	1.1	S.D. 7b-----	2,800	1.7
S.D. 1a-----	1,972	1.1	Kans. 12b-----	2,501	0.9
Nebr. 1a-----	1,962	0.9	5b-----	2,138	0.7
Iowa 12g-----	1,925	1.6	S.D. 7a-----	1,945	1.4
4d-----	1,902	0.9	Kans. 14a-----	1,365	0.4
12 men = Median			5a-----	1,121	0.8
Iowa 2a-----	2,398	1.1	Okla. 2a-----	690	0.2
3c-----	2,344	1.0	Average (23 men)---		
Mo. 5a-----	2,328	1.8	Median-----		
S.D. 1c-----	2,323	1.0	43 men = Median		
Mo. 6d-----	2,314	0.9	Iowa 2a-----	2,398	1.1
Iowa 3a-----	2,289	1.4	3c-----	2,344	1.0
4g-----	2,281	1.3	Mo. 5a-----	2,328	1.8
1f-----	2,226	1.0	S.D. 1c-----	2,323	1.0
8d-----	2,108	1.9	Mo. 6d-----	2,314	0.9
10b-----	2,086	1.0	Iowa 3a-----	2,289	1.4
10a-----	2,082	0.8	4g-----	2,281	1.3
2b-----	1,998	1.1	1f-----	2,226	1.0
2c-----	1,998	1.1	8d-----	2,108	1.9
S.D. 1a-----	1,972	1.1	10b-----	2,086	1.0
Nebr. 1a-----	1,962	0.9	10a-----	2,082	0.8
Iowa 12g-----	1,925	1.6	2b-----	1,998	1.1
4d-----	1,902	0.9	2c-----	1,998	1.1
12 men = Median			S.D. 1a-----	1,972	1.1
Iowa 2a-----	2,398	1.1	Nebr. 1a-----	1,962	0.9
3c-----	2,344	1.0	Iowa 12g-----	1,925	1.6
Mo. 5a-----	2,328	1.8	4d-----	1,902	0.9
S.D. 1c-----	2,323	1.0	12 men = Median		
Mo. 6d-----	2,314	0.9	Okla. 8c-----	3,520	2.1
Iowa 3a-----	2,289	1.4	1c-----	3,446	2.0
4g-----	2,281	1.3	3c-----	3,152	1.1
1f-----	2,226	1.0	3b-----	2,905	1.8
8d-----	2,108	1.9	S.D. 7b-----	2,800	1.7
10b-----	2,086	1.0	Kans. 12b-----	2,501	0.9
10a-----	2,082	0.8	5b-----	2,138	0.7
2b-----	1,998	1.1	S.D. 7a-----	1,945	1.4
2c-----	1,998	1.1	Kans. 14a-----	1,365	0.4
S.D. 1a-----	1,972	1.1	5a-----	1,121	0.8
Nebr. 1a-----	1,962	0.9	Okla. 2a-----	690	0.2
Iowa 12g-----	1,925	1.6	Average (23 men)---		
4d-----	1,902	0.9	Median-----		
12 men = Median			43 men = Median		
Iowa 2a-----	2,398	1.1	Iowa 2a-----	2,398	1.1
3c-----	2,344	1.0	3c-----	2,344	1.0
Mo. 5a-----	2,328	1.8	Mo. 5a-----	2,328	1.8
S.D. 1c-----	2,323	1.0	S.D. 1c-----	2,323	1.0
Mo. 6d-----	2,314	0.9	Mo. 6d-----	2,314	0.9
Iowa 3a-----	2,289	1.4	Iowa 3a-----	2,289	1.4
4g-----	2,281	1.3	4g-----	2,281	1.3
1f-----	2,226	1.0	1f-----	2,226	1.0
8d-----	2,108	1.9	8d-----	2,108	1.9
10b-----	2,086	1.0	10b-----	2,086	1.0
10a-----	2,082	0.8	10a-----	2,082	0.8
2b-----	1,998	1.1	2b-----	1,998	1.1
2c-----	1,998	1.1	2c-----	1,998	1.1
S.D. 1a-----	1,972	1.1	S.D. 1a-----	1,972	1.1
Nebr. 1a-----	1,962	0.9	Nebr. 1a-----	1,962	0.9
Iowa 12g-----	1,925	1.6	Iowa 12g-----	1,925	1.6
4d-----	1,902	0.9	4d-----	1,902	0.9

Table 6. - Average monthly volume of lubricating oil delivered per salesman in 1949-50, by areas

Month	Eastern area ¹		Western area ²	
	Pounds	Percent	Pounds	Percent
October 1949-----	208	8.3	218	5.2
November-----	147	5.9	128	3.1
December-----	143	5.7	181	4.3
January 1950-----	77	3.1	139	3.3
February-----	128	5.1	142	3.4
March-----	304	12.1	385	9.2
April-----	430	17.1	395	9.5
May-----	250	10.0	403	9.7
June-----	225	9.0	769	18.5
July-----	214	8.5	560	13.4
August-----	216	8.6	448	10.7
September-----	165	6.6	402	9.7
Total-----	2,507	100.0	4,170	100.0

¹Average of 82 salesmen.

²Average of 15 salesmen.

Table 7. - Average monthly volume of grease delivered per salesman in 1949-50, by areas

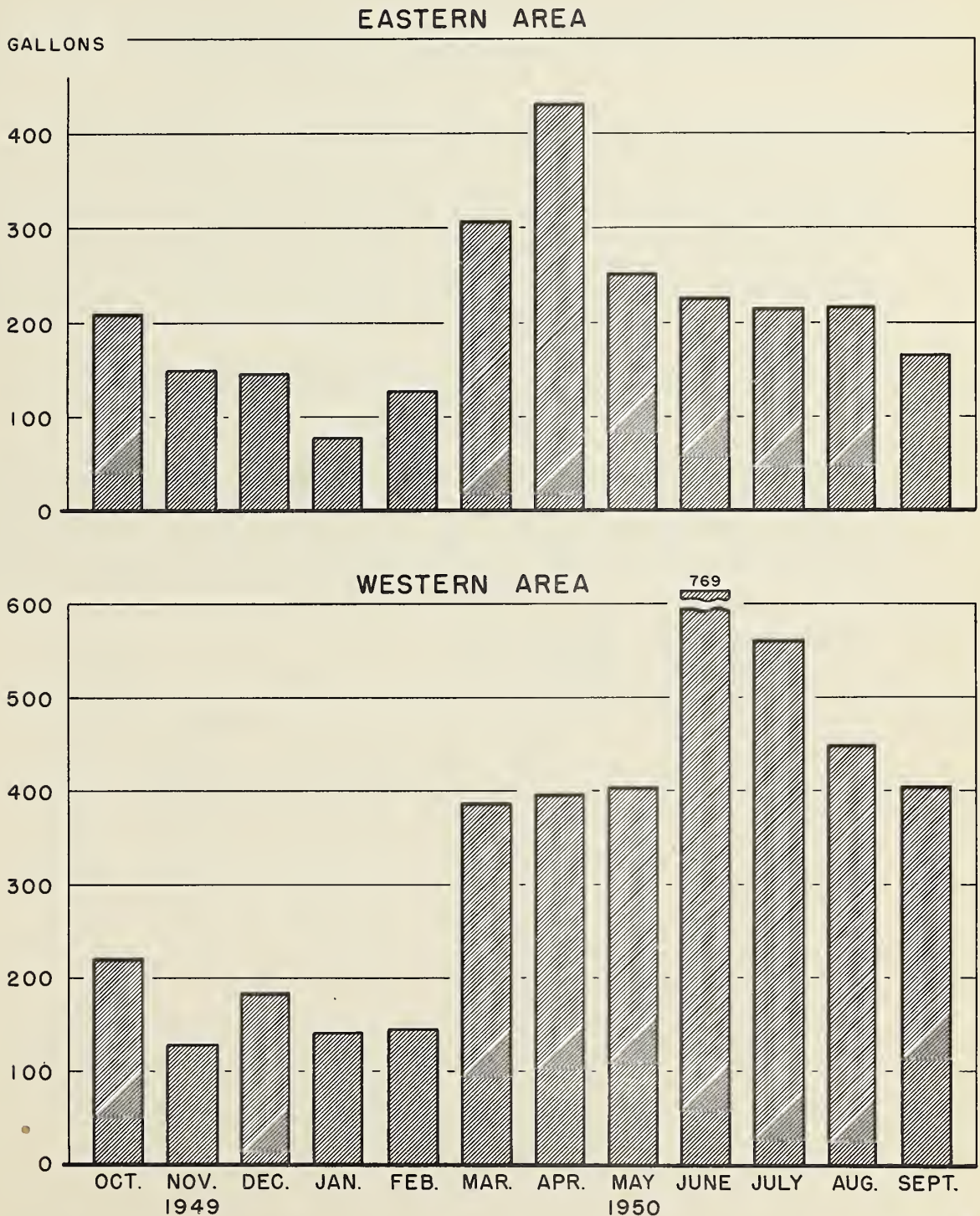
Month	Eastern area ¹		Western area ²	
	Pounds	Percent	Pounds	Percent
October 1949-----	396	14.0	193	4.2
November-----	158	5.6	151	3.3
December-----	93	3.3	86	1.9
January 1950-----	27	0.9	72	1.6
February-----	70	2.5	75	1.7
March-----	216	7.6	256	5.6
April-----	521	18.4	366	8.0
May-----	301	10.6	377	8.3
June-----	253	8.9	1,229	26.9
July-----	343	12.1	768	16.8
August-----	239	8.4	555	12.2
September-----	217	7.7	435	9.5
Total-----	2,834	100.0	4,563	100.0

¹Average of 82 salesmen.

²Average of 15 salesmen.

FIGURE 8

AVERAGE MONTHLY VOLUME OF LUBRICATING OIL DELIVERED PER SALESMAN, 1949-50



Monthly Volumes

Data on 82 salesmen in the Eastern area showed average deliveries of lube oil ranging from 77 to 165 gallons a month in November, December, January, February, and September; 200 to 250 gallons a month in May, June, July, August, and October; 304 gallons in March; and 430 gallons in April (Table 6 and figure 8).

In the Western area, the lube oil deliveries of 15 salesmen ranged from 128 to 218 gallons from October through February inclusive; from 385 to 448 gallons in March, April, May, August, and September; 560 gallons in July; and 769 gallons in June (Figure 8).

It is thus evident that the volume of oil delivered from October through February was about the same per man in both areas, but the monthly volume from March through September was much larger in the Western than in the Eastern area. Also, the peak volume came in the spring in the Eastern area and in the summer in the West (Table 6). The percentage of oil delivered each month is also shown in table 6. Annual and monthly quotas of lube oil based on suggested annual volumes of motor fuels are indicated in the table after the summary on page

Pounds of Grease Delivered Per Man -- Annually and Monthly

Annual Volumes

Deliveries of grease by 86 salesmen in the Eastern area and by 23 in the Western area in 1949-50 showed that the median volume was 2,625 pounds per man in the Eastern and 4,027 pounds in the Western area (Table 8). Wide variation existed in the volume of salesmen in each area as indicated by the following summary:

<u>Pounds</u>	<u>Eastern Area</u>	<u>Western Area</u>
	<u>Number of</u>	<u>salesmen</u>
Less than 1,000	10	1
1,000 - 1,999	18	4
2,000 - 2,999	24	4
3,000 - 3,999	14	2
4,000 - 4,999	11	5
5,000 - 5,999	6	2
6,000 - 6,999	2	2
7,000 and over	1	3
Total	86	23
 Average	 2,845	 <u>Pounds</u> 4,010
Median	2,625	4,027
Range	0 to 9,227	356 to 7,720
Volume exceeded by highest		
25 percent of salesmen	3,950	6,000

The pounds of grease delivered per gallon of motor fuel is shown in table 8. The median was 1.3 pounds in both the Eastern and Western areas. One-fourth of the salesmen in both areas exceeded 1.8 pounds.

The number of salesmen with various ratios was as follows:

<u>Ratio of grease to gallons of motor fuel (Pounds)</u>	<u>Eastern Area Number of salesmen</u>	<u>Western Area Number of salesmen</u>
Less than 0.8	9	5
0.8 - 0.99	9	0
1.0 - 1.19	11	2
1.2 - 1.39	17	5
1.4 - 1.59	5	1
1.6 - 1.79	11	3
1.8 - 1.99	7	2
2.0 - 2.19	7	0
2.2 and over	10	5
Total	86	23
Average	1.38	<u>Pounds</u> 1.53
Median	1.3	1.3
Range	0.0 to 2.8	0.2 to 3.7
Ratio exceeded by highest 25 percent of salesmen	1.8	1.8

The pounds of grease in relation to the gallons of lube oil delivered by salesmen in each area are shown in table 8. The median was 1.1 pounds in the Eastern and 1.0 pounds in the Western area. The number of salesmen with various ratios was as follows:

<u>Ratio of grease per gallon of lube oil (Pounds)</u>	<u>Eastern Area Number of salesmen</u>	<u>Western Area Number of salesmen</u>
Lesss than 0.8	7	6
0.8 - 0.89	6	2
0.9 - 0.99	14	1
1.0 - 1.09	14	2
1.1 - 1.19	9	2
1.2 - 1.29	14	0
1.3 - 1.39	2	1
1.4 - 1.49	3	0
1.5 and over	11	5
Total	80	19
Average (weighted)	1.12	<u>Pounds</u> 1.08
Median	1.09	1.02
Range	0.56 to 2.13	0.32 to 1.84
Ratio exceeded by highest 25 percent of salesmen	1.25	1.5

Table 8. - Pounds of grease delivered by salesmen of cooperatives during year ended September 30, 1950 (arranged from high to low)

Code number of salesman	Pounds of grease	Ratio of pounds of grease to gallons of motor fuel	Ratio of pounds of grease to gallons of lube oil
Eastern Area			
Kans. 1a-----	9,227	2.6	1.25
Kans. 2a-----	6,700	2.5	1.34
Iowa 6a-----	6,007	2.3	1.59
S.D. 4a-----	5,648	0.8	1.37
S.D. 1f-----	5,648	0.8	1.37
Nebr. 5a-----	5,359	1.9	1.51
Iowa 12i-----	5,155	2.0	1.63
S.D. 1f-----	5,145	1.9	1.33
Nebr. 4b-----	5,090	2.8	1.57
Iowa 10c-----	4,958	1.3	.96
S.D. 5a-----	4,910	1.3	1.06
Iowa 4b-----	4,745	1.2	1.19
S.D. 2b-----	4,715	1.2	.92
Iowa 8c-----	4,531	1.6	1.00
Nebr. 2c-----	4,225	1.6	1.28
Iowa 12d-----	4,185	1.6	1.24
Nebr. 8e-----	4,163	2.0	1.06
Mo. 2a-----	4,138	2.4	1.16
Nebr. 1b-----	4,093	1.7	1.02
Nebr. 4a-----	4,055	2.4	1.11
Iowa 3a-----	3,970	1.7	1.01
21 men = Upper one-fourth			
Kans. 19b-----	3,926	1.7	1.56
Iowa 1c-----	3,906	1.6	1.21
Iowa 7a-----	3,795	1.6	.94
Iowa 12e-----	3,622	1.4	.66
Iowa 12f-----	3,622	1.4	.66
Iowa 1b-----	3,602	1.6	1.21
S.D. 8a-----	3,601	2.3	1.17
Iowa 1b-----	3,573	1.2	.87
Iowa 1a-----	3,342	1.6	1.21
Iowa 4g-----	3,267	1.9	1.43
Mo. 3a-----	3,160	1.0	1.42
Iowa 3a-----	3,001	1.8	1.24
Iowa 3b-----	3,001	1.8	1.24
Iowa 6d-----	2,985	1.1	1.28
Iowa 1e-----	2,936	1.4	.90
S.D. 1c-----	2,902	1.2	1.25
Iowa 12g-----	2,827	2.4	1.47
S.D. 2a-----	2,730	0.8	.73
Mo. 5a-----	2,720	2.1	1.17
Iowa 10d-----	2,650	1.6	.83
Iowa 5c-----	2,675	0.9	.83
Iowa 3c-----	2,636	1.1	1.12
43 men = Median			
Iowa 1d-----	2,614	1.6	.90
Mo. 2a-----	2,599	1.2	1.08
Mo. 1c-----	2,587	1.1	.95
S.D. 1d-----	2,526	2.3	1.59
Iowa 12b-----	2,400	1.3	.83
Iowa 9a-----	2,398	1.4	1.00
Iowa 8b-----	2,362	1.2	.91
Iowa 8c-----	2,314	2.1	1.10
Iowa 4d-----	2,310	1.1	1.21
Nebr. 1a-----	2,288	1.1	1.17
Iowa 3a-----	2,236	1.3	.96
Iowa 4b-----	2,225	0.9	1.71
S.D. 1a-----	2,196	1.3	1.11
Iowa 2b-----	2,165	1.2	1.08
Iowa 2c-----	2,165	1.2	1.08
Iowa 8f-----	1,870	1.0	1.09
Iowa 3b-----	1,835	1.0	.76
Iowa 2d-----	1,732	1.2	1.08
S.D. 10a-----	1,716	0.7	.82
S.D. 1e-----	1,625	1.2	.90
Iowa 4a-----	1,620	0.9	1.22
64 men = Upper three-fourths			
S.D. 3a-----	1,526	0.9	.96
Mo. 5d-----	1,481	2.1	1.55
Nebr. 2b-----	1,465	1.2	.90
Iowa 6b-----	1,426	1.2	.95
Mo. 6b-----	1,370	1.8	1.02
Iowa 9a-----	1,320	0.5	1.28
Iowa 12j-----	1,293	1.3	.91
Iowa 10c-----	1,230	0.6	.59
Iowa 12b-----	1,149	2.2	.92
Iowa 12c-----	1,130	0.6	.88
Mo. 4c-----	1,085	0.9	1.60
Mo. 2a-----	1,053	2.0	.97
Mo. 2b-----	991	1.0	.56
Iowa 6c-----	980	0.6	1.85
Iowa 4f-----	980	1.1	2.13
Kans. 19a-----	953	1.1	1.22
Mo. 5b-----	741	2.0	1.02
Iowa 12a-----	715	0.6	.74
Mo. 4e-----	520	1.3	1.07
Mo. 5c-----	310	0.1	.90
Iowa 11a-----	0	0	0
Iowa 8a-----	0	0	0
86 men = Total			
Average-----	2,845	1.38	1.12
Median-----	2,625	1.3	1.09
Western Area			
Kans. 15a-----	7,720	3.3	1.83
Kans. 15b-----	7,720	3.3	1.83
Iowa 6a-----	7,074	3.7	1.16
Iowa 13a-----	6,080	1.7	1.38
Iowa 10a-----	6,050	1.7	1.35
Iowa 8a-----	5,829	1.3	.84
Iowa 8b-----	5,829	1.3	.84
Okla. 4a-----	4,800	1.1	1.07
Okla. 1a-----	4,650	1.2	1.20
Okla. 1b-----	4,650	1.2	1.20
Kans. 7a-----	4,477	1.8	.69
Okla. 1c-----	4,027	2.3	1.20
12 men = Median			
Kans. 8c-----	3,834	2.3	1.84
Okla. 3d-----	3,718	1.2	.84
Kans. 12b-----	2,895	1.0	1.16
Okla. 3b-----	2,855	1.8	.98
S.D. 7b-----	2,123	1.7	.75
Okla. 3c-----	2,026	0.7	.64
Kans. 5b-----	1,940	1.4	1.00
Kans. 2a-----	1,444	0.5	.68
Okla. 2a-----	1,130	0.3	1.64
Kans. 14a-----	1,012	0.3	.74
Iowa 5a-----	356	0.2	.32
23 men = Total			
Average-----	4,010	1.53	1.08
Median-----	4,027	1.3	1.0

If a standard of 250,000 gallons of motor fuels in the Eastern area and 320,000 gallons per man in the Western area is used then a standard of 1.7 pounds of grease per gallon of motor fuel is suggested. This is not as high as the ratio of 1.8 exceeded by the highest 25 percent of the salesmen but it would mean a grease volume of 4,250 pounds per salesman in the Eastern area and 5,440 pounds per man in the Western area. This would also mean that about 1.06 pounds of grease would be handled for each gallon of lubricating oil which was near the average of 1.1 for the entire group.

Monthly Volumes

Data on 80 salesmen in the Eastern area showed average grease deliveries of 27 to 158 pounds per month from November through February; 200 to 300 pounds in March, May, June, August and September; 300 to 400 pounds in July and October; and 521 pounds in April (Table 7 and figure 9).

Data on 15 salesmen in the Western area showed deliveries ranging from 72 to 200 pounds from October through February; from 250 to 450 pounds in March, April, May and September; 555 pounds in August; 768 pounds in July, and 1,229 pounds in June (Table 7 and figure 9).

The percentage delivered each month is also shown in table 7. Annual and monthly quotas of grease based on suggested annual volumes of motor fuels are indicated in the table after the summary on page

Other Supplies Sold or Delivered

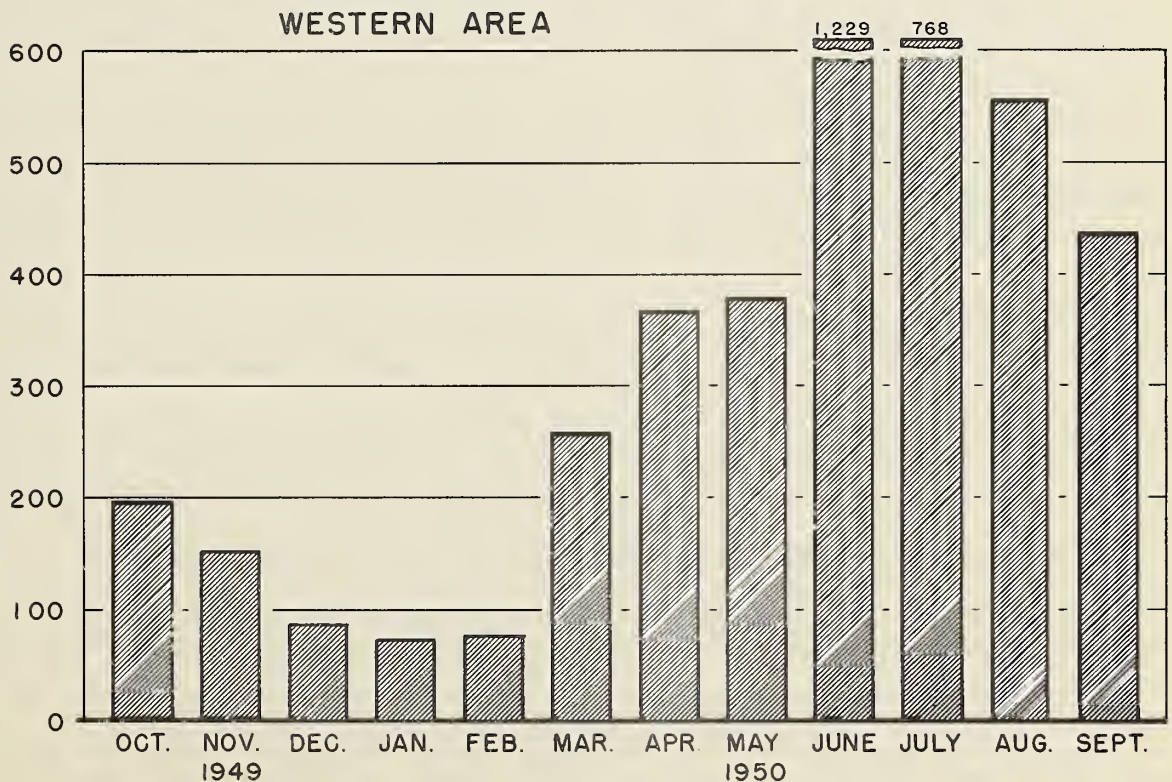
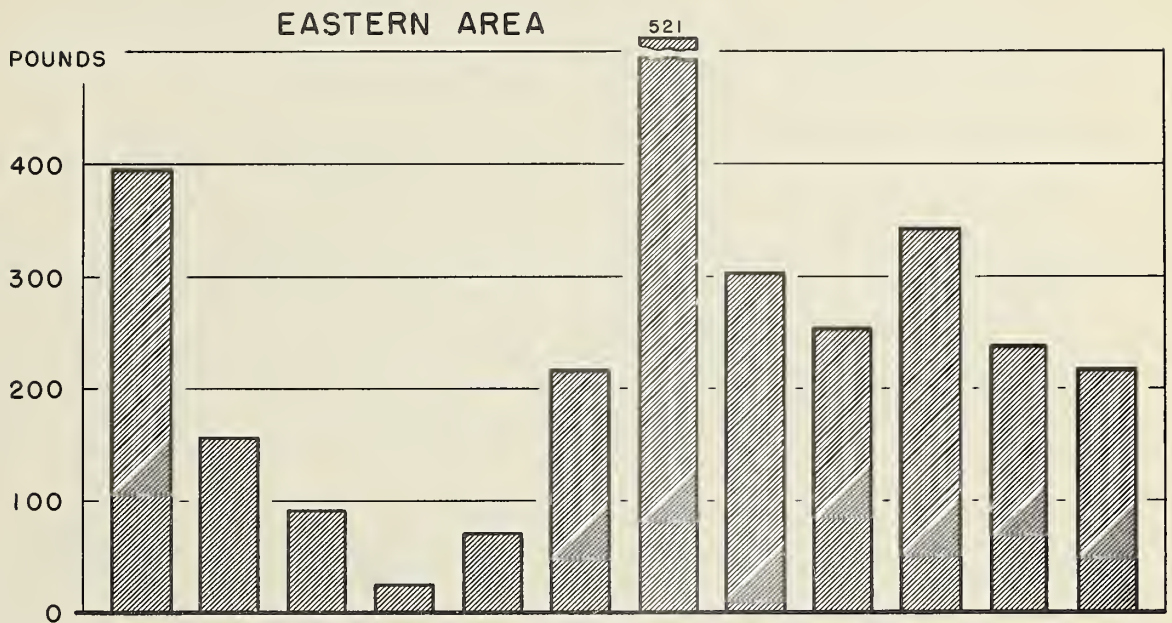
Very little automotive and miscellaneous supplies were sold or delivered by tank truck salesmen of the cooperatives surveyed. Furthermore, the sales of such supplies generally were not kept separately for each salesman except in the case of those employed on commission basis and often records on the latter were not readily available for the past year.

The most common items sold by the salesmen were tires, tubes, batteries, filters, cartridges, spark plugs, grease guns, anti-freeze, and fly spray. A few in Iowa sold paint. The usual rate of commission received was 10 percent although a number of cooperatives did not pay any commissions on such items. Several salesmen indicated that they delivered such merchandise but did not sell it. One association had a special truck for selling and delivering miscellaneous supplies. The most common reasons listed by the managers or salesmen for not handling miscellaneous supplies on their tank trucks were as follows:

1. It is not practical because of the extra time required. A salesman cannot deliver a large volume of petroleum products efficiently and give prompt service if he tries to sell a lot of miscellaneous merchandise. All they have time for is to deliver fuel and collect.

FIGURE 9

AVERAGE MONTHLY VOLUME OF GREASE DELIVERED PER SALESMAN, 1949-50



2. It is not practical because so many farmers are not home when fuel is delivered.
3. Such supplies were available at the service stations operated by practically all associations. Farmers preferred to buy there where they could get equipment installed and other needed services.
4. There is not sufficient room to carry or display a good stock of miscellaneous supplies on the truck.
5. It is a nuisance and not worth the time and bother.
6. The tank truck operator is just a truck driver or order-filler rather than a salesman.

A few salesmen and managers, however, thought that considerable more volume of such supplies could be developed by the salesmen, especially during the slack farming seasons. They believed that the items should be restricted to those previously mentioned. A few managers thought that such business could be developed best by those salesmen who operated on regular routes. Some were of the opinion that displaying seasonal merchandise on the trucks and mentioning it to the farmers would help increase volume at the service stations.

It appears to the writer that if maximum efficiency is to be obtained in selling and delivering refined fuels, lubricating oil, and greases, salesmen will not have time or the opportunity to sell very many related supplies. They should, however, be able to take orders for and deliver some merchandise, especially that not involving a trade-in allowance, and they should be able to handle a few seasonal items such as anti-freeze, fly spray, and perhaps paint, especially in the Eastern area.

Insufficient data on sales of miscellaneous supplies were obtained on which to establish an annual volume standard per salesman. But on the basis of the average sales of a group of cooperative salesmen in the central and another in the eastern part of the United States, a tentative standard of \$2,500 worth of supplies per Eastern salesman and \$2,000 worth per Western salesman is suggested.

Additional data are needed to find the amount of major items such as tires and tubes which should make up these totals.

The possibilities of handling paint is indicated by one group of salesmen in a heavily populated farming State who sold about \$2,000 worth per man per year.

Total Sales of Oil Products and Related Supplies

On the basis of prevailing prices of oil products in the area studied and the volume standards suggested in this report, the total sales of

oil products and related supplies would be about \$80,000 annually per salesman in each area exclusive of taxes on gasoline and other taxable fuels.

Number of Patrons Served

The number of farm patrons served varied greatly among the salesmen. Some had a relatively large number which were small users or they bought only a small proportion of their needs from the cooperative. Others had a relatively small number of large users who gave all their patronage to the association. In many associations the number of petroleum patrons was considerably less than the total supply patrons or those marketing grain through the association.

Likewise, the number of nonfarm patrons, mostly fuel oil users, varied among the salesmen as did the number of stations, curb pumps, churches, schools, commercial firms, and government agencies served.

The number of salesmen who could not readily give the number of patrons they served was surprising. Estimates obtained from part of the group, however, showed that the average number of patrons served per salesman was as follows:

	<u>Eastern Area</u> <u>(43 salesmen)</u>	<u>Western Area</u> <u>(20 salesmen)</u>
<u>Type of patron</u>		
Farm patrons	184	186
Nonfarm patrons	43	61
Total	227	247

The number of salesmen serving certain numbers of farm patrons in each area was as follows:

<u>Farm patrons served</u>	<u>Eastern Area</u>	<u>Western Area</u>
Under 100	2	5
100 - 149	11	1
150 - 199	10	3
200 - 249	7	7
250 - 299	10	1
300 and over	3	3
Total	43	20

The Western salesmen would be expected to have fewer but larger patrons because this area had an average of only 1.6 farms per square mile compared to 3.1 in the Eastern area. This was not the case, however, possibly because several Western associations had only one salesman when they perhaps should have had two, and a number of Eastern associations each had several salesmen.

The average number of patrons in both areas seem high. ^{4/} A total of 180 farm patrons would be equivalent to serving 15 a day, six days a week every other week. Forty-eight nonfarm patrons would be equivalent to only four a day every two weeks, but, no doubt, many more could have been served as their fuel oil volume came mostly during slack seasons of farm motor fuel consumption.

As mentioned 37 salesmen each delivered fuels to one or more service stations, most of which were operated by the cooperatives. In two associations, however, the salesmen alternated months in taking care of the station. Only 12 salesmen reported serving curb pumps at stores or garages.

Most salesmen delivered fuel oil to two or three schools and churches. One reported serving 11 schools and three churches; another seven schools and one church; and another six schools and three churches. Only half a dozen reported serving governmental accounts, such as township, county, or State highway maintenance or construction equipment.

Fifteen salesmen reported delivering fuel to commercial firms such as trucking lines, construction companies, wood sawing firms, sand and gravel firms, stone quarrying companies, creameries, and hospitals. In a few cases this type of patron accounted for considerable volume.

Information was not obtained separately on the number of gasoline or motor fuel patrons, heating fuel patrons, lubricating oil patrons, nor grease patrons. An analysis of this type would show which refined fuel patrons were not buying their lubricating oil or grease from the cooperative and vice versa.

Comments with respect to the density of patrons served and estimated proportion of farm petroleum business handled by the salesmen are included in a later section of the report.

It appears that if any standards regarding patrons are to be used, they should be by types and areas and limited to regular rather than total patrons. (Regular patrons might be defined as those which obtain half or more of their volume from the cooperative.) Types should include farm patrons, city fuel oil patrons, and other patrons, including schools and commercial accounts. Cooperatives located in small towns would have little opportunity to serve city or urban users, and salesmen serving large wheat farms and ranches would have fewer patrons than those serving smaller diversified farms.

^{4/} Another group of cooperative salesmen in a central general farming State served an average of 160 farm patrons per man in 1949.

It is thus difficult to set standards for number of patrons for salesmen to serve, but the following are tentatively suggested:

<u>Type of patrons</u>	<u>Eastern Area</u>	<u>Western Area</u>
Regular farm patrons	175	135
Regular city fuel oil patrons	40	20
Other patrons served	15	10

Information was not obtained on the number of new patrons obtained and the number of old patrons lost each year per salesman. Managers should establish quotas for prospective patrons to be called on and new patrons to be obtained annually for each salesman depending upon individual circumstances. The experience of a group of cooperative salesmen in the eastern part of the United States indicates that one new patron was obtained from every three contacted.

Miles Driven Per Man - Annually

Only a few salesmen kept a record of the miles they drove their truck during a year. Useable estimates, however, were obtained from a number of men on the basis of the present mileage on their trucks and the number of months which they had been owned. In most cases the mileage obtained can be considered as that driven in making deliveries of fuel. Few special trips were made with trucks to collect receivables or to solicit patrons and little travel was involved between the salesmen's homes and bulk plants or for personal business.

Data from 53 salesmen, 40 of which were in the Eastern area, showed that they drove an average of 16,972 miles in 1950 (Table 9). Information was not obtained on the number of days worked but on the basis of a full year this was equivalent to 1,414 miles per month; 326 miles per week; and 54 miles per day (6 days a week). On the basis of 50 weeks it would be equivalent to 339 miles a week and 56.5 miles a day.

The median was 16,000 miles. One-fourth of the men drove 20,000 or more miles and one-fourth drove less than 14,200 miles. The range was from 10,000 to 31,500 miles per man (Table 9 and figure 10).

The number driving specified mileages were as follows:

<u>Miles</u>	<u>Number of salesmen</u>
10,000 - 11,999	5
12,000 - 13,999	7
14,000 - 15,999	13
16,000 - 17,999	8
18,000 - 19,999	6
20,000 - 21,999	7
22,000 - 23,999	2
24,000 and over	5
Total	53

Factors influencing miles driven are discussed in a later section of this report.

As indicated in the next section, it would be desirable to keep track of the miles driven on farm deliveries separately from those driven on city fuel oil and station deliveries. This would permit computation of the gallons delivered per mile for both farm and nonfarm or city patrons.

On the basis of standards suggested for volumes and "gallons per mile" to deliver, the standards for miles driven annually on all deliveries and calls on prospective patrons would be approximately 16,700 per salesman in the Eastern area and 17,500 miles per man in the Western area. Total miles driven in making farm calls and deliveries would be 15,450 in the Eastern and 17,000 miles per salesman in the Western area. This would mean that 1,250 miles would be driven on city deliveries and calls in the Eastern area and 500 miles would be traveled on them in the Western area. These may have to be revised considerably after additional data are obtained. Although insufficient data on mileages were obtained, it would seem logical that the Western salesmen would drive more because their territories were generally larger.

Gallons Delivered Per Mile Driven -- Annually

"Gallons delivered per mile driven" is a simple measure of the efficiency with which fuel is moved from bulk plants to patrons' storage tanks. Studies indicate that it is closely related to delivery costs per gallon of fuel. Of course, both measures are most useful if delivery practices and equipment and types of patrons and their storage are rather uniform. If a large proportion of fuel, for example, is delivered to stations and to nonfarmers such as city fuel oil patrons, then the "gallons delivered per mile" should be computed on farm and nonfarm business separately. This would require both volume and mileage to be kept separately on both types of deliveries.

Since some salesmen delivered a considerable volume of fuel to stations and others delivered none, it appeared advisable to compute "gallons delivered per mile" on the basis of the volume delivered to farms and to nonfarms, exclusive of that to stations and dealers. Total miles had to be used, but since relatively little travel was involved in station deliveries, more uniformity was acquired by using total miles than total gallons.

Records on 53 salesmen, of which 42 in the Eastern area, showed that they delivered an average of 19.2 "gallons per mile driven" (exclusive of station volume) in 1949-50. The median was 18.2 gallons (Table 9 and figure 10). One-fourth were above 23.2 and one-fourth were below 15.0 gallons per mile. The range was from 8.8 to 38.3 gallons. 5/
There were no significant differences between areas.

5/ A group of cooperative salesmen in a central State had rural deliveries averaging 18.3 gallons per mile in 1948. Another group of 76 salesmen in Virginia, West Virginia, Delaware, Maryland and Kentucky had deliveries, mostly to farms, averaging 23.2 gallons per mile in 1949-50.

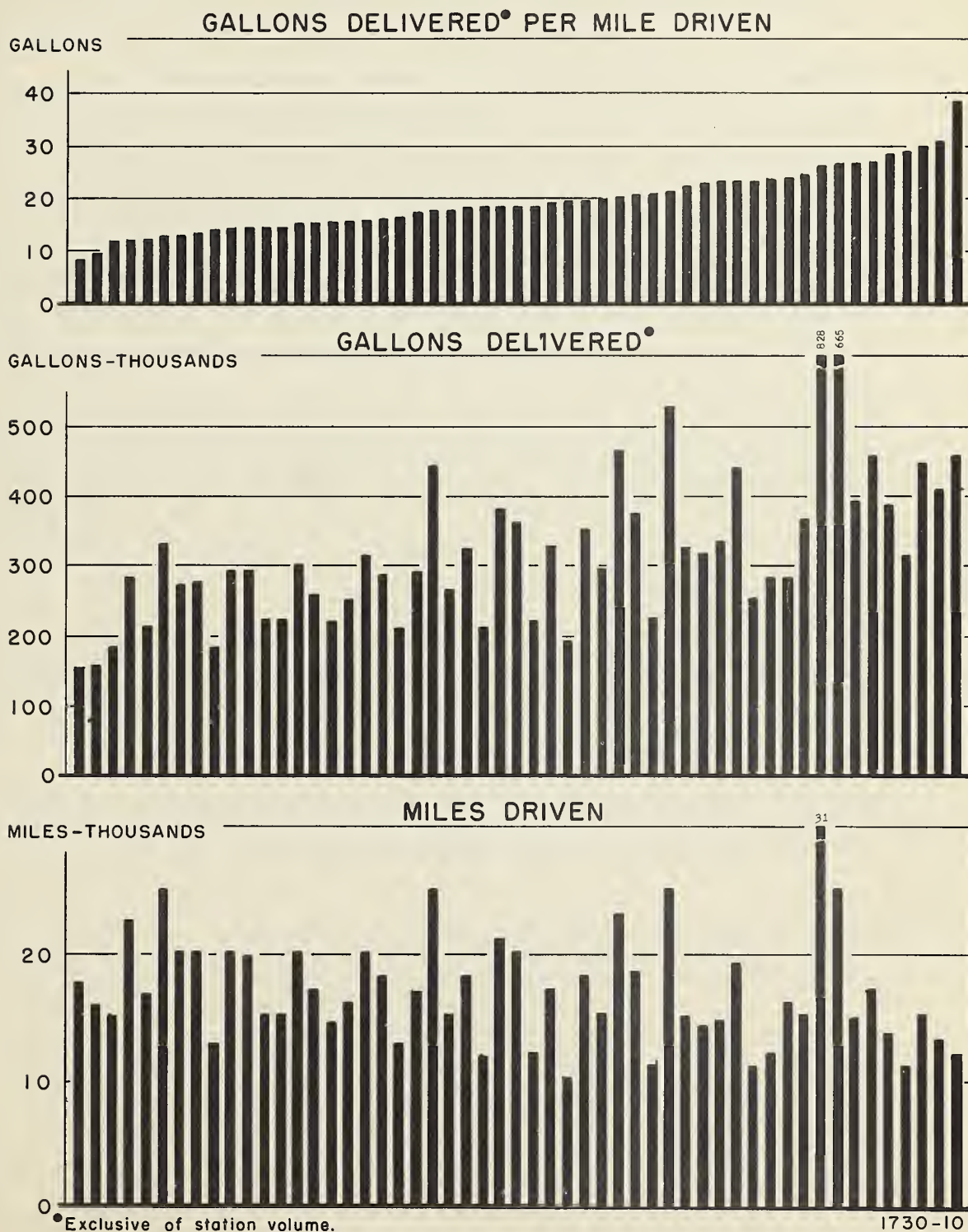
Table 9. - Gallons of fuel delivered per mile driven (exclusive of that to stations) by 53 salesmen of cooperatives during the year ended September 30, 1950 (arranged from high to low)

Code No. of salesmen	Gallons delivered per mile driven (excluding station volume)	Gallons of fuel delivered (ex- cluding station volume)	Total miles driven on all deliveries
Iowa 6a-----	38.3	459,457	12,000
Kans. 13a-----	¹ 30.9	406,960	² 13,170
Iowa 10b-----	30.0	449,649	15,000
Kans. 8b-----	¹ 28.9	318,090	11,000
Iowa 10a-----	28.8	388,861	13,500
Iowa 8c-----	27.0	459,457	17,000
Iowa 10a-----	26.7	393,251	14,727
Iowa 5a-----	26.6	665,895	25,000
Iowa 11a-----	26.3	828,088	31,495
Iowa 4c-----	24.6	369,019	15,000
Iowa 7a-----	24.0	383,858	16,000
Kans. 10e-----	23.7	283,853	12,000
Kans. 8a-----	¹ 23.3	256,640	11,000
Average-----	27.4	435,621	15,915
13 men = Upper one-fourth			
S.D. 2a-----	23.1	439,417	19,000
Iowa 3b-----	23.1	334,746	14,500
Iowa 1f-----	22.8	319,039	14,000
Mo. 1a-----	22.1	326,549	14,800
S.D. 2b-----	¹ 21.0	526,030	25,000
Kans. 9a-----	¹ 20.7	227,861	11,000
Iowa 4a-----	20.5	375,196	18,300
Iowa 3c-----	20.2	464,287	23,000
Iowa 3a-----	19.9	298,237	15,000
Iowa 1b-----	19.6	351,995	18,000
Iowa 9a-----	19.5	194,859	10,000
Iowa 4b-----	19.3	328,000	17,000
Kans. 8c-----	¹ 18.4	221,054	12,000
Kans. 20a-----	18.2	363,000	20,000
Average-----	20.6	340,734	16,543
27 men = Median			
Iowa 1c-----	18.2	381,722	21,000
Iowa 6b-----	18.2	214,083	11,760
Iowa 1a-----	18.1	326,641	18,000
S.D. 8e-----	17.8	266,509	15,000
Kans. 12a-----	¹ 17.8	444,873	25,000
Kans. 15a-----	¹ 17.4	293,802	16,916
Iowa 10d-----	16.6	212,510	12,833
Kans. 7a-----	¹ 16.1	289,184	18,000
Iowa 8g-----	15.9	318,765	20,000
Iowa 2b-----	15.8	252,068	16,000
Kans. 19b-----	15.5	222,239	14,300
Kans. 21a-----	15.3	260,000	17,000
Iowa 2a-----	15.1	302,481	20,000
Average-----	16.8	291,144	17,370
40 men = Upper three-fourths			
Mo. 3a-----	14.9	224,145	15,000
Mo. 3b-----	14.9	224,145	15,000
Kans. 15b-----	14.9	293,802	19,766
Iowa 1d-----	14.7	294,212	20,000
Iowa 8b-----	14.4	185,766	12,860
Iowa 8f-----	13.9	277,991	20,000
S.D. 3a-----	13.7	274,681	20,000
S.D. 1e-----	13.2	330,441	25,000
Iowa 10c-----	12.7	212,510	16,728
S.D. 5b-----	¹ 12.5	282,152	22,500
S.D. 7b-----	¹ 12.4	184,778	14,900
S.D. 7a-----	¹ 10.0	157,055	15,750
Mo. 2b-----	8.8	155,577	17,700
Average-----	13.2	238,250	18,093
53 men = Total			
Average-----	19.2	326,707	16,972
Median-----	18.2	-	-

¹Located in Western area. All others were in the Eastern area.

²Full year was based on mileage records during first 9 months in relation to volume delivered during that period.

FIGURE 10
GALLONS OF FUEL DELIVERED PER MILE
DRIVEN BY 53 SALESMEN, 1949-50



These averages were about 1.5 gallons per mile under those computed on the basis of total gallons delivered including station volume. On that basis the average was 20.7 and the median was 20 gallons. One-fourth were above 25.0 and one-fourth were below 17.2 gallons per mile.

Figure 10 and table 9 indicate that those salesmen with the highest "gallons delivered per mile" had larger volumes and less mileage per year than the salesmen with the lowest "gallons per mile." This was most evident when the one-fourth with the highest "gallons per mile" rate were compared with the lowest one-fourth. 6/

On the basis of the performance exceeded by the highest 25 percent of the salesmen, a recommended standard would be 23 gallons of fuel per mile of travel (exclusive of deliveries to stations). This would require 17,400 miles of travel in delivering a volume of 400,000 gallons per year and 13,000 miles to deliver 300,000 gallons. However, the writer is of the opinion that a higher standard should be used for salesmen in the Eastern area than for those in the Western area because their territories were generally smaller and because this area had more motor vehicles per square mile--about 8 compared with 5 in the Western area. Therefore, a standard of 24 gallons per mile for the Eastern salesmen and 23 gallons per mile for the Western men is suggested.

As mentioned data were not available on "farm volume delivered per mile driven to farms," but until further information indicates otherwise a standard of 21 gallons for Eastern salesmen and 20 gallons per mile for Western salesmen is suggested. Also, this would mean that approximately 40 gallons of fuel per mile would be delivered on city deliveries in both areas.

Delivery Costs

This section contains a discussion of delivery costs where salesmen are employed on a commission and on a salary basis; operating expenses of tank trucks; and suggested standards for delivery costs.

Delivery Costs Where Salesmen on Commission 7/

Information obtained on 95 salesmen in the Eastern area indicated that 82 men, or 86 percent, were employed on a commission basis in 1950. The other 13 men were on a salary basis. In the Western area only

6/ A study of 22 cooperative salesmen in Virginia, Delaware and Maryland showed that reduction in mileage was mainly responsible for improvement in delivery efficiency wherein "gallons per mile" increased from 16.5 in 1942 to 19.4 in 1944.

7/ The term "delivery costs" as used in this report refers to both the salary or commission of the tank truck salesmen and the operating expenses of the tank truck. Technically the former might be called selling expense and the latter delivery expense, but in most cases the majority of the salesmen's time is spent in delivering fuel.

seven out of 39 salesmen, or 18 percent, were on a commission and the other 82 percent were on a salary. The number employed on each basis by States were as follows:

<u>Eastern Area</u>	<u>Commission basis (Number)</u>	<u>Salary basis (Number)</u>
Iowa	43	4
South Dakota	11	1
Nebraska	6	2
Missouri	15	1
Eastern Kansas	7	5
Total	82	13
<u>Western Area</u>		
South Dakota	3	5
Central and Western Kansas	3	18
Oklahoma	1	9
Total	7	32

Seven salesmen on commission were guaranteed a minimum salary. Also, three salesmen each owned two trucks and employed another salesman or operator on a salary basis.

All the commission salesmen except three owned their trucks and the co-operatives owned the truck tanks. Practically all associations owned the unloading pumps and meters.

Where the cooperatives owned the trucks, the rates of commission were somewhat less because truck costs were borne by the association. Where the salesmen owned the trucks, only a few cooperatives paid for the gasoline and oil used, or paid them a truck allowance.

A number of salesmen were held responsible for credit extended beyond that authorized by the manager or directors, or for past due accounts. Not many had accounts deducted from their commissions in 1949-50, but a few had some commissions deferred or withheld pending collection of outstanding accounts. Four salesmen in one cooperative purchased the fuel outright from the cooperative and therefore had to carry any credit extended and absorb any losses incurred.

None indicated that they were charged for excess shrink, but one received his gasoline and oil free if he held his shrinkage under one percent of sales. Those purchasing their fuel outright from the cooperative, of course, had to stand any shrinkage.

Rates of Commissions Paid - The rates of commissions paid by 32 associations are listed in table 10. Specific rates per gallon were usually paid on different fuels with a lower rate on volume delivered to stations and dealers. The most common rates paid where the salesmen owned the truck and paid all his operating expenses, were 2 cents a gallon on gasoline delivered to farms; 1 cent a gallon on gasoline to stations; 2 cents a gallon on kerosene; 1.5 cents a gallon on fuel oil and tractor fuel; 5 cents a gallon or 10 percent of sales on lubricating oil; 1 cent a pound or 10 percent of sales on grease; and 10 percent a dollar on miscellaneous supplies.

Gross Commissions Paid - Data obtained on 30 salesmen showed that they were paid an average of \$4,898 in gross commissions in 1949-50 (Table 11). The range was from \$2,598 to \$8,184. They averaged \$5,061 per man in Iowa and \$4,711 per man in the other States.

These commissions averaged 1.41 cents per gallon of product delivered. The range was from 0.9 to 2.0 cents a gallon. This was on the basis of a gallon of refined fuel and lubricating oil and a pound of grease each being equal to one gallon. Commissions paid on miscellaneous supplies, although small, should have been deducted or the sales of supplies converted to equivalent units, but data were not available.

A more accurate basis would have been the use of per-unit costs if data had been available on miscellaneous supplies sold by each salesman. On this basis, 1 unit of petroleum products would equal 1 gallon of refined fuels and motor oil and 8 pounds of grease; and one unit of nonpetroleum supplies would equal the average per-gallon value of a unit of petroleum products for a given year.

Other Delivery Costs - In addition to commissions, other delivery costs of the cooperatives included the following:

1. Annual expenses of the truck tanks, pumps and meters as most cooperatives owned this equipment; insurance; property taxes; painting; repairs; and depreciation. Since they were not readily separated from the rest of the expenses of the associations, an arbitrary amount totaling \$250 for each tank, pump, and meter was used. This may have been a little high for the older equipment whose original cost was somewhat less than that acquired in 1949 or 1950.
2. Truck operating expenses where the cooperative owned the tank truck and paid salesmen commissions at reduced rates.
3. Gasoline, oil, and insurance or a truck allowance where the cooperative followed the practice of paying such items.
4. Social security taxes paid on the net commissions of salesmen by a few of the cooperatives who voluntarily made such contributions.

Table 10. - Rates of commissions paid to salesmen by cooperatives in 1949-50

Code number of cooperative	Gasoline			Kerosene		Tractor and diesel fuel		Distillate fuel oil		Lube oil		Grease		T.B.A. ¹ items	Comments	
	To farms	To local stations in other towns		To farms	To stations	To farms	To stations	To farms	To stations	To farms	To stations	Cents per pound				
		Ethyl and Third grade										To farms	To stations			
														Percent		
			Cents per gallon													
Iowa	1-----	2	2	-	2	-	1.5	-	1.5	-	5¢	-	1¢	-	10	Gasoline + 1½¢ commission on discount volume. ²
	2-----	2	1.5	-	1.5	-	1	-	1.5	-	10¢	-	10¢	-	10	Co-op pays for one fill of gasoline per day per salesmen.
	3-----	2	1.5	0.375	2	-	1.5	-	1.5	-	10¢	-	10¢	-	3	Co-op owns trucks.
	5-----	1	1	-	0.7	-	1.5	-	0.5	-	5¢	-	1¢	-	-	-
	6-----	2	2	-	2	-	-	-	1 - No. 1	-	8¢	-	2¢	-	-	-
	7-----	2	2	-	2	-	2	-	1.5 - No. 2	-	9¢	-	1¢	-	0	-
	8 a-f-----	2	2	0.25	2	1	2	1	1.25	-	15¢	-	10¢	-	-	-
	8g-----	2	2	1	2	-	1.25	-	1.25	-	15¢	-	10¢	-	-	Salesmen at outlying stations.
	9-----	2	2	0.5	2	-	1.5	-	1	-	10¢	-	10¢	-	-	-
	10 a-b-----	1.25	1.25	0.25	1	1.25	1	1	1	-	5¢	5¢	1¢	1¢	-	Gasoline to co-op station = 0.25¢ gal.
	10c-----	1.625	1.625	1	1.625	1	1	1	1	1	5¢	5¢	1¢	1¢	-	-
	10d-----	1.5	1.5	1	1.5	1	1	1	1	1	5¢	5¢	1¢	1¢	-	-
	11-----	0.75	0.75	-	0.75	-	0.75	-	0.75	-	10¢	-	0	-	0	Co-op pays for gas, oil, insurance and \$828 truck allowance annually.
	12a-----	2.5	2.5	-	0.5	2	-	-	60¢ gr. mar. - No. 1	-	15¢	-	15¢	-	0	-
	12b-----	1.25	1.25	-	0.25	1	-	-	2 - No. 2	-	15¢	-	15¢	-	0	Co-op owns trucks.
									30¢ gr. mar. - No. 1	-						-
									1 - No. 2	-						-
S.D.	1-----	2	2	1	2	-	1	-	1	-	10¢	5¢	10¢	5¢	10	Also 5¢ on T.B.A. to dealers.
	2-----	1.5	1.5	0.33	1	-	1	-	1	-	5¢	-	10¢	-	-	-
	3-----	2	1.5	1	2	-	2	-	0.75	-	12¢	-	10¢	-	-	T.B.A. not handled.
	4-----	1.25	1.25	0.25	1.25	-	1.25	-	1.25	-	5¢	-	1¢	-	-	Gasoline to city patrons = 0.5¢ gal.
	5-----								4 percent of sales divided equally between two salesmen	-					-	-
	7-----	2	2	-	2	-	1	-	1.5	-	10¢	-	1¢	-	-	-
Mo.	1a-----	2	2	0.75	2	-	2	-	1.5	-	12.5¢	7.5¢	1¢	-	2	Gasoline to city patrons = 0.5¢ gal.
	1b-----	2.25	2.25	-	2.5	-	1.5	-	1.5	-	12.5¢	7.5¢	1.5¢	-	2	Gasoline to city patrons = 0.5¢ gal.
	1c-----	1.75	1.75	1	2.25	-	2	-	1.5	-	12.5¢	7.5¢	1¢	-	2	-
	2-----	2	1.5	-	2	-	-	-	1.5	-	5¢	-	1¢	-	5	-
	3-----	2	2	-	2	-	-	-	1	-	5¢	-	1¢	-	0	-
Mo.	5-----	2	2	0.5	2	-	-	-	1.5	-	9¢	-	2¢	-	5	Gasoline and oil paid by co-op.
	6 a-b-----	2	2	0.5	1	1.5	-	-	1	-	5¢	-	1¢	-	10	Also, have guaranteed minimum salaries.
	6c-----	2	2	1	1.5	-	-	-	1	-	5¢	-	1¢	-	10	Also, have guaranteed minimum salaries.
	6d-----	2.25	2.25	1	1.5	-	-	-	1	-	10¢	-	10¢	-	10	-
Nebr.	1-----	1.5	1.5	1	1	-	1	-	1	-	5¢	-	1¢	-	5	-
	2-----	1	1	-	1	-	1	-	1	-	5¢	-	1¢	-	5	-
	4-----	2	2	2	2	-	2	-	2	-	10¢	-	10¢	-	10	Oil - 5¢ gal. in barrel lots.
	7-----	0.8	0.8	0.2	0.5	-	0.8	-	0.8	-	4¢	-	10¢	-	10	Co-op owns trucks. Pays 5¢ on paint: 3 to 5¢ on feed sales.
Kans.	12 (summer)-----	1	1	-	1	-	1	-	1	-	-	-	-	-	-	-
	12 (winter)-----	1.5	1.5	-	1.5	-	1.5	-	1.5	-	-	-	-	-	-	-
	16-----	0.5	0.5	0.5	0.5	-	0.5	-	0.5	-	2¢	-	0.5¢	-	10	Minimum salary plus commissions.
	19-----	2	1.5	0.5	1	2	1	-	1.25	-	5¢	-	12¢	-	-	-
	21-----	2	2	-	-	-	2	-	1.5	-	6¢	-	-	-	-	Gasoline = 1.7¢ a gallon on large deliveries.
Okla.	2-----	1	1	1	1	-	1	-	1	-	10¢	-	1¢	-	-	Gasoline and oil paid by co-op. Minimum salary of \$1,800 per year guaranteed.

¹Tires, batteries, and accessories.²One salesman in a new territory receives a base salary of \$100 a month plus commissions at 50 percent of regular rates.

5. Miscellaneous items such as hiring extra labor for the salesman during busy seasons or vacations, group life insurance, and pension payments.

Total Delivery Costs - The total delivery costs for 30 salesmen averaged \$5,148 per man in 1949-50. This was equivalent to 1.48 cents per gallon of products delivered and 31.8 cents per mile driven by the salesman (Table 11).

The number of salesmen with various delivery costs per gallon were as follows:

<u>Cents per gallon</u>	<u>Number of salesmen</u>
0.8 - 0.99	2
1.0 - 1.24	1
1.25 - 1.49	13
1.5 - 1.74	7
1.75 - 1.99	4
2.0 and over	3
Total	30

In comparing delivery costs of salesmen on a commission basis with those on a salary basis, an association paying commissions often receives other services besides selling and delivery. These include some control of credit and collection of receivables; control of shrinkage; care and responsibility for the truck; and less of the managers time required for supervision. It is difficult to evaluate these but in some cases they are worth a considerable amount.

Net Commissions or Income of Salesmen. Only 29 salesmen provided data on their truck operating costs and other expenses. They received net commissions or income averaging \$3,554 per man in 1949-50 (Table 12). The range was from \$1,178 to \$6,149. Nine received less than \$3,000; 10 received between \$3,000 and \$4,000; six received between \$4,000 and \$5,000; and four received more than \$5,000.

These wages were equivalent to 1.01 cents per gallon of product delivered and 21.7 cents per mile traveled (Table 12).

The number which were in specified ranges per gallon were as follows:

<u>Cents per gallon</u>	<u>Number of salesmen</u>
Less than 0.75	3
0.75 - 0.99	8
1.0 - 1.24	13
1.25 or more	5
Total	29

Table 11. - Delivery costs of cooperatives employing salesmen on a commission basis, 1949-50

Mo.	Code number of salesmen	Gross commissions paid ¹	Other delivery expenses of cooperatives ²	Total delivery costs		Total refined fuels, oil, and grease delivered	Total miles driven	Gallons of fuel delivered per mile ³
				Amount	Cents per gallon			
Mo.	1a-----	\$5,918	\$250	\$6,168	1.32¢	467,420	14,800	22.1
	1b-----	5,212	250	5,462	1.75	312,174	-	-
	1c-----	4,321	250	4,571	1.40	326,897	-	-
	2b-----	3,061	250	3,311	2.03	163,345	17,700	8.8
	3a-----	4,000	250	4,250	1.47	289,575	15,000	14.9
	3b-----	4,000	250	4,250	1.47	289,575	15,000	14.9
	3c-----	2,837	250	3,087	1.39	221,518	-	-
	19b-----	4,252	250	4,502	1.54	291,827	14,300	15.5
	21a-----	5,062	250	5,312	2.04	260,000	17,000	15.3
	12b-----	2,972	250	3,222	1.10	291,915	19,000	15.4
S.D.	2a-----	6,939	250	7,189	1.42	506,487	19,000	23.1
	2b-----	8,184	250	8,434	1.43	589,783	25,000	21.0
	3a-----	4,079	250	4,329	1.56	277,804	20,000	13.7
	7a-----	5,125	250	5,375	2.89	185,940	15,750	10.0
	Average (14 men)-----	4,711	250	4,961	1.55	319,590	517,505	518.8
Iowa	2a-----	5,276	250	5,526	1.71	323,272	20,000	15.1
	2b-----	3,728	250	3,978	1.48	269,392	16,000	15.8
	6a-----	10,432	500	10,932	1.59	469,242	12,000	38.3
	6b-----	6,466	250	6,716	1.59	217,014	11,760	18.2
	7a-----	3,405	250	3,655	1.71	391,692	16,000	24.0
	8a-----	6,756	250	7,006	1.56	234,345	-	-
	8c-----	4,567	250	4,817	1.49	468,951	17,000	27.0
	8f-----	5,106	250	5,356	1.37	352,597	15,000	17.1
	9a-----	4,266	250	4,516	26.8	299,581	20,000	13.9
	10a-----	5,656	250	5,906	1.79	257,045	10,000	19.5
	10b-----	5,663	250	5,913	1.76	462,659	14,727	26.7
Average (per gallon)-----	10c-----	5,196	250	5,446	1.28	457,535	15,000	30.0
	10d-----	2,598	250	2,848	1.29	289,082	16,728	12.7
	10e-----	4,173	250	4,423	1.88	289,082	12,833	16.6
	11a-----	7,688	250	7,938	0.99	323,858	12,000	23.7
	11b-----	5,061	250	5,311	1.37	831,140	31,495	26.3
Average (30 men)-----	Average (16 men)-----	5,061	250	5,311	1.43	371,031	516,036	523.7
	Average (30 men)-----	\$4,898	\$250	\$5,148	1.483¢	347,025	516,657	521.5
	Average (per gallon)-----	1,411¢	0.072¢	1.483¢	533.8	531.8¢		

¹Does not include payroll taxes paid by cooperatives on net commissions of a few salesmen.²Estimated expenses for truck bank, pump, and meter include depreciation at 10 percent per year, insurance, taxes, repairs, and painting.³Exclusive of station volume tank, pump, and meter include depreciation at 10 percent per year, insurance, taxes, repairs, and painting.⁴Located in Western area; all others are in Eastern area.⁵Average of those reporting miles driven.

Table 12. - *Net commissions (after expenses) of 29 salesmen of cooperatives in 1949-50*

Code number of salesmen	Net commissions (after expenses)			Total gallons refined fuels, oil, and grease delivered	Total miles driven
	Amount	Cents per gallon	Cents per mile		
Mo. 1a-----	\$4,627.79	0.99¢	31.3¢	467,420	14,800
1b-----	4,044.52	1.30	-	312,174	-
1c-----	2,866.30	0.88	-	326,897	-
2b-----	2,310.55	1.41	13.1	163,345	17,700
3a-----	3,000.00	1.04	20.0	289,575	15,000
3b-----	3,000.00	1.04	20.0	289,575	15,000
Kans. 19a-----	2,117.04	0.96	-	221,518	-
19b-----	3,141.81	1.08	22.0	291,827	14,300
21a-----	3,413.52	1.31	20.1	260,000	17,000
12b-----	1,457.54	0.50	7.7	291,915	19,000
S.D. 2a-----	5,139.00	1.01	27.0	506,487	19,000
2b-----	6,149.00	1.04	24.6	589,783	25,000
3a-----	2,799.86	1.01	14.0	277,804	20,000
7a-----	3,824.00	2.06	24.3	185,940	15,730
Iowa 2a-----	3,860.00	1.19	19.3	323,272	20,000
2b-----	2,253.00	0.84	14.1	269,392	16,000
6a-----	5,364.00	1.14	44.7	469,242	12,000
7a-----	4,570.00	1.17	28.6	391,692	16,000
8a-----	2,710.00	1.16	-	234,345	-
8c-----	4,933.00	1.05	29.0	468,951	17,000
8e-----	3,836.00	1.09	25.6	352,597	15,000
8f-----	3,739.00	1.25	18.7	299,581	20,000
9a-----	3,063.00	1.19	30.6	257,045	10,000
10a-----	4,502.00	0.97	30.6	462,659	14,727
10b-----	4,311.00	0.94	28.7	457,535	15,000
10c-----	2,676.00	0.93	16.0	289,082	16,728
10d-----	1,178.00	0.41	9.2	289,082	12,833
10e-----	3,035.00	0.94	25.3	323,858	12,000
11a-----	5,139.00	0.62	16.3	831,140	31,495
Average (29 men)	\$3,553.79	1.011¢	¹ 21.7¢	351,508	¹ 16,053

¹Average of those reporting miles.

The detailed operating expenses of their tank trucks and those operated by salaried salesmen are discussed at the end of this section of the report.

Delivery Costs Where Salesmen Were on Salary

As mentioned, 34 of 42 salesmen in the Western area but only 10 of 92 in the Eastern area were on a salary basis. Seven salesmen on a commission basis were guaranteed a minimum salary. One association paid its three salesmen a base salary plus a small commission on all fuels, oil, grease, and auto supplies. Another paid four salesmen a bonus of 7 percent of net savings and another paid three salesmen 5 percent of total net savings in addition to their base salary. A few gave small Christmas bonuses to their salesmen. Only one association paid its salesmen by the hour.

None of the salaried salesmen owned their tank trucks and unloading equipment. Neither were they held responsible for bad accounts or shrinkage to the extent of having any such losses deducted from their salaries.

Salaries Paid - Salaries received by tank truck salesmen varied with the experience and performance of the man, and also with the size of the town in which the cooperative was located and the general level of wages in the area. In several cases salaries had been increased in 1951 over those listed here for 1950.

Data on 24 salesmen showed that they received an average salary of \$2,600 in 1949-50 (Table 13). The range was from \$1,800 to \$3,100. The average of those reporting complete delivery costs was \$2,700 or 0.74 of a cent per gallon. The number receiving various amounts were as follows:

<u>Annual salary</u>	<u>Number of salesmen</u>
Less than \$2,400	4
2,400 - 2,699	10
2,700 - 2,999	7
3,000 or more	3
Total	24

These salaries were equivalent to 0.77 of a cent per gallon of product delivered (Table 14). The range was from 0.39 to 2.47 cents. The number with various "salaries per gallon" were as follows:

<u>Cents per gallon</u>	<u>Number of salesmen</u>
Less than 0.5	4
0.5 - 0.74	4
0.75 - 0.99	10
1.0 or more	6
Total	24

Table 13. - Delivery costs of cooperatives employing salesmen on a salary basis in 1949-50

Code number of salesmen	Salary	Social security taxes	Truck expenses	Tank, pump and meter expenses ¹	Total delivery costs			Total gallons refined fuels, oil and greases delivered	Total miles driven	Gallons of fuel delivered per mile ²
					Amount	Cents per gallon	Cents per mile			
Kans.	8a----	\$47	\$830	\$250	\$4,226	1.30¢	38.4¢	325,129	11,000	23.3
	8b----	43	942	250	4,115	1.27	37.4	325,129	11,000	28.9
	8c----	44	1,402	250	4,661	2.04	38.8	228,408	12,000	18.4
	9a----	36	997	250	4,683	1.62	33.5	227,861	11,000	20.7
	10a----	36	839	250	3,525	0.81	26.1	434,559	13,500	28.8
	11a----	36	1,474	250	4,160	1.39	-	300,000	-	-
	12a----	44	1,398	250	4,604	1.03	18.4	444,873	25,000	17.8
	13a----	40	1,637	250	4,628	1.11	35.1	417,401	13,170	30.9
	15a----	36	1,129	250	3,815	1.17	22.6	325,734	16,916	17.4
	15b----	46	1,563	250	4,928	1.51	24.7	325,734	19,966	14.9
	6a----	40	2,166	250	5,139	0.94	-	548,701	-	-
	6b----	40	2,166	250	5,115	0.93	-	548,701	-	-
	6c----	39	2,002	250	4,907	1.20	-	407,322	-	-
	6d----	44	1,155	250	4,371	1.18	-	369,502	-	-
	7b----	36	1,307	250	3,993	1.86	-	214,701	-	-
Average-- Per gallon	\$2,700 0.744¢	\$41 0.011¢	\$1,400 0.386¢	\$250 0.069¢	\$4,391 1.210¢	1.21	328.6	362,917	314,839	322.9
Iowa	2c-----							269,391	-	-
	6b-----							217,014	11,760	18.2
Okla.	12j-----							155,029	-	-
	2a-----							459,290	-	-
	4a-----							276,746	-	-
Mo.	4a-----							286,285	-	-
	14a-----							512,354	-	-
Kans.	20a-----							400,000	20,000	20.0
	20b-----							100,000	-	-
Average--	\$2,433							297,346	15,880	19.4
Average (24 men)-	\$2,600							338,328	15,028	22.5

¹Estimated expenses include depreciation at 10 percent per year, insurance, taxes, repairs, and painting.²Exclusive of station volume.³Average of those reporting miles driven.⁴These salesmen were in the Eastern area; all others were in the Western area.

Table 14. - *Salaries of 24 salesmen of cooperatives in 1949-50.*

Code number of salesmen	Salary			Total refined fuels, oil and grease delivered in gallons	Total miles driven
	Total	Cents per gallon	Cents per mile		
Kans. 8a-----	\$3,100	0.95¢	28.2¢	325,129	11,000
8b-----	2,880	0.89	26.2	325,129	11,000
8c-----	2,965	1.30	24.7	228,408	12,000
9a-----	2,400	1.05	21.8	227,861	11,000
10a-----	2,400	0.55	17.8	434,559	13,500
11a-----	2,400	0.80	-	300,000	-
12a-----	2,912	0.65	11.7	444,873	25,000
13a-----	2,700	0.65	20.5	417,401	13,170
15a-----	2,400	0.74	14.2	325,734	16,916
15b-----	3,069	0.94	15.4	325,734	19,966
14a-----	2,195	0.43	-	512,354	-
20a-----	3,070	0.77	15.4	400,000	20,000
20b-----	2,470	2.47	-	100,000	-
S.D. 6a-----	2,683	0.49	-	548,701	-
6b-----	2,660	0.48	-	548,701	-
6c-----	2,616	0.64	-	407,322	-
6d-----	2,922	0.79	-	369,502	-
7b-----	2,400	1.12	-	214,701	-
Iowa 2c-----	2,600	0.97	-	269,391	-
6b-----	2,700	1.24	23.0	217,014	11,760
12j-----	2,700	1.74	-	155,029	-
Okla. 2a-----	1,800	0.39	-	459,290	-
4a-----	2,162	0.78	-	276,746	-
Mo. 4a-----	2,200	0.77	-	286,285	-
Average (24 men)	\$2,600	0.77	¹ 18.5	338,328	¹ 15,028

¹Average for those reporting miles driven.

Truck Operating Expenses - Only a few associations kept operating expenses separately on each tank truck which they owned. Data on 15 trucks showed average truck expenses, including depreciation of \$1,400 per truck in 1950. The range was from \$830 to \$2,166. These costs averaged 0.39 of a cent per gallon of product delivered. They are discussed in detail in the next section of this report.

Other Delivery Costs - As indicated an arbitrary amount of \$250 was used as annual expenses for the tanks, pump and meter. This averaged only 0.07 of a cent per gallon of product delivered. Payroll or social security taxes averaged \$41 per salesman.

Total Delivery Costs - Total delivery costs thus averaged \$4,391 per salaried salesman for the 15 on which data were available. This was equivalent to 1.21 cents per gallon of product delivered and 28.6 cents per mile driven by those which reported mileage (Table 13).

Delivery costs ranged from \$3,525 to \$5,139 per salesman; from 0.81 of a cent to 2.04 cents per gallon; and from 18.4 to 38.8 cents per mile.

The number with specified costs per gallon were as follows:

<u>Cents per gallon</u>	<u>Number of salesmen</u>
0.8 - 0.99	3
1.0 - 1.24	5
1.25 - 1.49	3
1.50 - 1.74	2
1.75 - 1.99	1
2.0 and over	1
Total	15

Itemized Operating Expenses of Tank Trucks

Records of operating costs could be obtained on only 32 tank trucks owned by cooperatives or their salesmen, and some of these included estimates. Oil and grease were often included with gasoline, and depreciation or insurance for two or more trucks was sometimes combined. Where trucks were owned by the salesmen, they had compiled operating expenses for their personal income tax records, but such data generally was not at the office of the cooperative. Several salesmen mailed in their truck expenses later for analysis.

Several associations, however, had started in 1951 to keep records of their truck costs and the miles they were driven. In one case, this was begun because the cooperative was standing the cost of gasoline for a truck and the manager believed the amount being used was excessive.

Cash operating expenses during 1950 averaged \$884 and depreciation \$373, making a total of \$1,257 per truck (Table 15). The range in total expenses was from \$728 to \$2,549 per truck.

These costs averaged 7.78 cents per mile driven, of which 5.45 cents were cash expenses and 2.33 cents were depreciation costs. The number with specified total costs per mile were as follows:

<u>Cents per mile</u>	<u>Number of trucks</u>
Less than 6.0	6
6.0 - 6.9	4
7.0 - 7.9	4
8.0 - 8.9	5
9.0 - 9.9	6
10.0 and over	4
Total	29

These costs were equivalent to 0.35 of a cent per gallon of product delivered of which 0.25 of a cent was cash operating expenses and 0.10 of a cent was depreciation costs (Table 15). The range in total expense was from 0.19 to 0.61 of a cent per gallon. The number with specified total costs per gallon were as follows:

<u>Cents per gallon</u>	<u>Number of trucks</u>
Less than 0.25	3
0.25 - 0.32	10
0.33 - 0.49	15
0.50 or more	4
Total	32

The average amounts of various expenses per truck as shown in table 15 were as follows: 8/

<u>Item</u>	<u>Amount</u>	<u>Cents per mile</u>	<u>Cents per gallon</u>
Gasoline	\$434.82	2.69	0.121
Oil and grease	32.49	.20	.009
Tires and tubes	96.52	.59	.027
Batteries, filters, equip.	5.57	.04	.002
Repairs	180.41	1.11	.050
Licenses and taxes	39.34	.25	.011
Insurance	51.84	.33	.014
Miscellaneous	42.85	.24	.012
Subtotal	883.84	5.45	.246
Depreciation	372.81	2.33	.104
Total	\$1,256.65	7.78	0.350

8/ Operating costs of over 100 trucks in a central State in 1948 were as follows on a per mile basis:

	<u>Cents</u>
Gas and oil	3.40
Tires and tubes	.90
Insurance	.35
Repairs	1.02
Miscellaneous	.39
Subtotal	6.06
Depreciation	2.41
Total	8.47

Table 15. - Itemized operating expenses of tank trucks owned by cooperatives and by salesmen in 1950

Code number of salesman	Gasoline	Oil and grease	Tires and tubes	Batteries, filters, other equipment	Repairs (parts and labor)	Insurance	Licenses and taxes ¹	Miscellaneous	Sub-total	Depreciation	Total	Miles driven	Expense in cents per mile	Gallons of fuel, oil and grease delivered	Expense in cents per gallon
Iowa															
2a-----	\$500.48	\$27.00	\$111.48	\$29.77	\$116.93	\$65.55	\$70.00	\$5.00	\$926.21	\$490.00	\$1,416.21	20,000	7.08¢	323,272	0.44¢
2b-----	484.02	24.00	150.00	-	202.19	74.50	70.00	-	1,004.71	370.00	1,474.71	16,000	9.22	269,392	0.55
6a-----	339.62	31.40	125.96	16.80	64.33	65.69	41.00	-	684.80	312.50	997.30	12,000	8.31	469,242	0.21
7a-----	575.30	40.00	17.78	-	273.68	141.48	52.00	126.84	1,227.08	395.60	1,622.68	16,000	10.14	331,692	0.41
8a-----	192.36	10.00	-	-	13.80	93.47	80.00	-	389.63	300.00	689.63	-	-	234,345	0.29
8c-----	464.77	18.64	81.14	-	658.05	34.38	70.00	-	1,326.98	300.00	1,626.98	17,000	9.57	468,951	0.35
8e-----	103.86	4.96	-	-	125.83	118.70	40.00	-	393.35	337.70	731.05	15,000	4.87	352,597	0.21
8f-----	498.40	-	-	-	184.40	139.20	46.75	225.00	1,093.75	252.78	1,346.53	20,000	6.73	299,581	0.45
9a-----	370.08	30.00	-	-	-	123.10	97.50	60.00	690.68	487.00	1,177.68	10,000	11.78	257,045	0.46
10a-----	350.50	53.71	-	-	70.21	-	166.25	60.00	700.67	453.90	1,154.57	14,727	9.84	462,659	0.25
10b-----	545.40	74.96	-	-	121.17	50.80	95.00	60.00	961.36	390.60	1,351.96	15,000	9.01	457,535	0.30
10c-----	361.10	32.85	137.65	14.03	65.41	34.60	95.00	67.14	806.63	330.00	1,136.63	16,728	6.79	289,082	0.39
10d-----	270.00	23.58	84.27	13.06	203.81	19.38	40.00	74.28	728.38	-	728.38	12,833	5.68	289,082	0.25
10e-----	475.00	64.10	-	14.95	131.41	-	-	60.00	745.46	392.10	1,137.56	12,000	9.48	323,858	0.35
11a-----	985.21	62.50	413.21	37.73	600.05	40.50	110.00	-	2,249.20	300.00	2,549.20	31,495	8.09	831,140	0.31
Average (15 trucks)	434.41	33.18	74.77	9.27	188.75	66.76	69.73	51.72	928.59	347.48	1,276.07	216,342	28.06	381,298	0.33
Mo.															
1a-----	323.15	75.90	210.00	14.00	137.50	50.00	-	65.25	875.80	375.00	1,250.80	14,800	8.45	467,420	0.27
1b-----	376.40	24.00	51.43	-	270.54	-	-	181.16	903.62	263.92	1,167.54	-	-	312,174	0.37
1c-----	560.00	50.00	225.00	-	191.50	-	-	20.00	1,046.50	300.00	1,346.50	-	-	326,897	0.41
2b-----	150.00	-	-	-	45.00	80.00	25.00	-	300.00	450.00	750.00	17,700	4.24	163,345	0.46
Kans.															
21a-----	400.00	57.70	475.13	25.00	118.80	96.45	-	25.40	1,198.48	450.00	1,648.48	17,000	9.70	260,000	0.63
8a-----	287.80	17.40	-	-	87.33	-	-	37.29	429.82	400.00	829.82	11,000	7.54	325,129	0.26
8b-----	327.70	21.60	-	-	113.83	-	-	78.78	541.91	400.00	941.91	11,000	8.56	325,129	0.29
8c-----	342.30	39.81	-	-	590.91	-	-	28.77	1,001.79	400.00	1,401.79	12,000	11.68	228,408	0.61
9a-----	265.00	25.00	30.00	-	-	31.79	-	96.76	351.79	644.97	996.76	11,000	9.06	227,861	0.44
10a-----	275.00	23.33	31.00	-	35.00	40.00	15.00	-	418.33	470.46	838.79	13,500	6.21	434,559	0.19
12a-----	607.68	24.50	75.75	-	78.61	126.67	38.00	48.90	998.11	400.00	1,398.11	25,000	5.59	444,873	0.31
12b-----	402.30	26.02	225.07	-	511.39	24.73	15.00	110.04	1,314.55	200.00	1,514.55	19,000	7.97	291,915	0.52
13a-----	619.35	25.00	75.00	-	189.06	128.00	65.00	-	1,101.41	535.72	1,637.13	13,170	12.43	417,401	0.39
15a-----	472.12	25.00	75.00	-	167.64	-	-	-	739.76	188.81	928.57	16,916	5.49	325,574	0.29
15b-----	539.14	30.00	75.00	-	99.20	-	-	-	743.34	388.88	1,132.22	19,966	5.67	325,734	0.35
S.D.															
2b-----	1,100.00	50.00	200.00	-	150.00	-	35.00	-	1,535.00	500.00	2,035.00	25,000	8.14	589,783	0.35
3a-----	350.00	28.73	219.88	-	155.39	80.00	20.00	-	854.00	400.00	1,254.00	20,000	6.27	277,804	0.45
Average (17 trucks)	435.18	31.88	115.72	2.30	173.04	38.69	12.53	35.03	844.37	395.16	1,239.53	216,470	27.51	337,892	0.37
Average (32 trucks)	\$434.82	\$32.49	\$96.52	\$5.57	\$180.41	\$51.84	\$39.34	\$42.85	\$883.84	\$372.81	\$1,256.65	216,408	27.78	358,239	0.35
Expense per mile -	2.69¢	0.20¢	0.59¢	0.04¢	1.11¢	0.33¢	0.25¢	0.24¢	5.45¢	2.33¢	7.78¢	-	-	-	-
Expense per gallon -	0.121¢	0.009¢	0.027¢	0.002¢	0.050¢	0.01¢	0.011¢	0.012¢	0.246¢	0.104¢	0.350¢	-	-	-	-

¹In some cases, license taxes were included in miscellaneous expenses.
²A range of those reporting miles driven.

These costs appeared representative for the 32 trucks as a group, but they were not always representative for any individual truck. Some had no repairs or tire expenses in 1950 but a large amount in 1949. Also, gasoline and oil consumption in a particular year vary with the condition of the trucks. Therefore, at least two years operating costs are needed to give a picture of the normal performance or operating costs of an individual truck. Standards of 7.5 cents a mile driven and 0.33 of a cent per gallon delivered are suggested.

Both the salesmen who own trucks and those driving trucks owned by the cooperatives should begin keeping a record of the operating expenses of their trucks and the miles driven. One group of petroleum cooperatives in the eastern part of the United States which are stressing preventive maintenance of their trucks classify their repair and maintenance expenses under the following headings to keep better track of the place, time, and amount of repair costs:

A - Chassis

Motor	\$
Cooling .....	.....
Fuel .....	.....
Ignition .....	.....
Steering .....	.....
Drive assembly .....	.....
Wheel springs frame .....	.....
Brakes .....	.....
Lighting .....	.....
Total .....	.....
Cost per mile ¢

C - Total Chassis, Body and Tank Repairs \$

Cost per mile ¢

D - Other

Tire and tube costs \$

Cost per mile ¢

Towing

Lubrication

Total \$

Cost per mile ¢

B - Body and Tank

Body and fenders	\$
Delivery equipment .....	.....
Tank and manifold .....	.....
Total .....	.....
Cost per mile ¢

E - Total Expenses \$

Total cost per mile ¢

In view of the amount invested in a tank truck and the high cost of operating it, more accurate records on its performance and operating expenses appear worth while.

Suggested Standards For Delivery Costs

On the basis of the foregoing data the following standards are suggested for both areas:

1. Delivery wages (salaries or net commissions) equivalent to 0.8 of a cent a gallon and 4.5 percent of sales, exclusive of taxes. If a

salesman obtained the volume standards suggested for all products he would receive a net wage of around \$3,600 annually.

2. Tank truck operating expenses of 7.5 cents a mile and 0.33 of a cent a gallon.

3. Other delivery costs of 0.07 of a cent a gallon.

4. Total delivery costs of 1.2 cents a gallon of refined fuels and 6.75 percent sales of all products, exclusive of taxes.

CAUSES OF VARIATIONS IN DELIVERY OPERATIONS AND COSTS

Many factors affect the volume delivered and miles driven annually by tank truck salesmen. It is impossible to segregate any one and accurately measure the extent it influences delivery operations and efficiency. One high volume salesman may show up strong in three or four ways and weak in others, while another may be strong and weak in a different set of factors. Furthermore, the main factor may often be the ability of the salesman which is difficult to appraise. Reliance for evaluation of ability must be placed upon the manager and then his appraisal will only be relative; that is, in terms of comparison with other salesmen in the association or in other associations he has formerly managed. Furthermore, these factors are interrelated or overlapping with two or three often influencing another one.

With these limitations in mind, a number of items are discussed and data presented where possible to indicate their influence on delivery operations and efficiency. To reduce the amount of analysis and to bring out contrasts, salesmen or cooperatives which rank high and those which rank low in certain factors such as annual volumes were given special attention in some cases.

Type of Area Served

Nature of Farming

Both wheat and general farming are now largely performed with tractors and motor-driven equipment. A larger proportion of the motor fuel consumption by farmers in the wheat area is from June to September while in the Eastern area, more fuel is used earlier in the spring for planting small grain and row crops and more is also used in the fall for harvesting corn, soybeans, and forage. Furthermore, in areas of diversified farming such as dairying and livestock feeding, more motor fuel is used in the winter for grinding and hauling feed, hauling manure, and other farm work, and more fuel oil and kerosene for brooders and water tank heating would be used. It might, therefore, be expected that the total volume of gasoline delivered per salesman would be larger in the general farming area than the wheat area, but data in this survey showed it to be somewhat less.

The managers of a few associations mentioned that one salesman had a greater volume than another because he served a better farming area with more bottom land and more mechanized equipment. Another indicated that the type of farming in irrigated and upland sections influenced petroleum consumption and the performance of tank truck salesmen.

Equipment Using Petroleum Products

The number of motor vehicles, stationary and mounted engines, brooders, dehydrators, orchard heaters, and furnaces and space heaters using fuel oil which are owned by farmers and city patrons is, of course, one of the most important factors determining the volume and travel of a petroleum salesman. If there is not a good potential in his area he cannot obtain a large volume and efficient operations. There is often more competition, however, where there is a large potential, and this influences the volume which the cooperative salesman may deliver.

The number of tractors and other motor vehicles has increased rapidly in recent years. From 1945 to 1950, inclusive, tractors on farms in the six States, represented by cooperatives in this study increased 36.6 percent; trucks increased 58.8 percent; and automobiles increased only 1.0 percent. The over-all increase in total motor vehicles was 22.5 percent (appendix tables 2, 3, and 4).

Part of the reason for the small increase in automobiles came from the change in definition of farms which resulted in a 6.2 percent decrease in number of farms for the six States from 1945 to 1950.

Data were not available on other petroleum-using equipment and on farm furnaces and heaters which used fuel oil, but there has been a substantial increase in recent years in the number of homes which heat with fuel oil.

In much of the Western area the potential number of city fuel patrons is much less than in the Eastern area because the towns are fewer in number and smaller. And in Oklahoma, natural gas is used for heating extensively. Also, the number of other nonfarm users such as construction companies, trucking lines, and churches, vary among communities served by the cooperatives.

In the Eastern area there was an average of 2,193 tractors per county which was equivalent to 115 per 100 farms, 3.6 per square mile, and 1.5 per 200 acres of all crop land. The number per county varied with the size of the county to some extent, but the range was from 58 to 142 per 100 farms; from 2.3 to 5.3 per square mile; and from 1.9 to 2.2 per 200 acres of crop land (Table 16).

There were an average of 664 trucks per county, or 35 per 100 farms with the range from 22 to 67 per 100 farms. There were 2,130 farm automobiles per county, or 112 per 100 farms with the range from 75 to 131 per 100 farms. Crop acres represented 73 percent of the total acreage.

Table 16. - Tractors, trucks, automobiles, crop acres, and telephones on farms in counties in which cooperatives were surveyed, 1950

State and county	Tractors on farms			Trucks on farms		Automobiles on farms		Autos, trucks, & tractors on farms			Total farms	Total miles	Crop acres in 1949		Percent of farmers reporting telephones
	Total number	Per 100 farms	Per sq. mile	Per 200 crop land	Total number	Per 100 farms	Total number	Per 100 farms	Total number	Per 100 farms	Per sq. mile		Total	Percent of total acres	
Eastern Area															
So. Dakota															
Charles Mix	2,208	134	2.1	0.9	762	46	1,914	116	4,884	296	4.5	1,076	456,662	98	62
Lincoln	2,385	132	2.9	1.2	586	41	2,115	127	5,086	304	6.3	1,816	304,566	83	71
Minnehaha	2,378	130	4.0	1.6	745	45	2,276	126	5,399	301	9.5	566	304,566	84	81
Nebraska	3,163	130	4.0	1.6	903	37	3,069	126	7,135	293	9.1	785	395,631	79	81
Butler	1,854	108	3.3	1.2	688	40	1,945	113	4,487	260	7.9	569	297,633	82	59
Dallas	2,239	110	4.0	1.7	724	42	2,094	122	5,057	294	10.1	549	271,893	80	79
Jefferson	1,645	135	3.5	1.3	572	40	1,648	115	3,865	270	7.0	549	244,703	78	53
Nemaha	1,405	106	3.6	1.4	507	38	1,439	109	3,351	254	8.7	387	194,184	70	72
Platte	2,322	116	3.6	1.4	599	30	2,431	122	5,352	268	8.3	647	332,588	80	60
Kansas															
Adair	1,428	101	2.7	1.4	663	47	1,331	94	3,422	241	6.4	536	200,881	59	48
Cloud	1,773	114	2.7	1.3	1,039	67	1,524	98	4,336	280	6.6	658	283,614	67	79
Marion	2,510	121	2.8	1.3	1,071	52	2,424	117	6,005	290	6.8	881	387,768	69	83
Marshall	2,202	96	2.6	1.3	745	32	2,457	107	5,404	235	6.3	859	344,427	63	85
Nemaha	2,019	103	2.9	1.4	572	29	2,220	103	4,811	246	6.3	928	284,593	64	79
Putnam	1,810	102	1.1	1.5	616	31	1,810	102	4,811	246	6.3	928	284,593	64	79
Putnam	1,212	102	2.3	1.6	605	31	1,430	121	3,247	274	6.1	529	146,967	43	84
Iowa															
Adams	1,433	95	3.4	1.6	382	25	1,577	104	3,392	224	8.2	416	179,264	67	81
Boone	2,569	108	4.7	1.8	572	24	2,521	106	5,662	239	10.4	545	282,748	81	79
Dallas	2,222	153	5.3	2.2	456	31	2,163	137	4,584	315	10.9	422	241,467	69	85
Ida	1,987	137	4.7	1.7	483	33	1,605	110	4,075	280	9.5	427	232,324	85	90
Montgomery	1,745	115	4.2	1.6	393	26	1,806	119	3,944	260	9.6	412	211,973	81	93
O'Brien	2,704	138	4.9	1.8	610	31	2,292	117	5,606	286	10.1	556	306,947	85	83
Plymouth	2,014	112	4.7	1.6	980	28	2,383	110	8,877	253	9.7	902	491,680	82	87
Sioux	3,639	122	4.9	1.8	717	24	3,547	119	7,903	266	10.6	747	406,066	85	88
Shelby	2,736	129	4.7	1.7	496	23	2,728	129	5,960	281	10.2	564	331,502	89	91
Webster	3,420	134	5.0	1.8	842	33	2,912	114	7,174	282	10.5	684	374,514	86	86
Missouri															
Clinton	959	62	2.3	1.2	336	22	1,179	77	2,474	161	6.0	413	159,475	60	56
Grundy	1,907	90	2.8	1.4	543	44	1,091	89	2,731	223	7.0	1,223	151,612	61	70
Ray	1,909	58	2.3	1.3	395	25	1,298	83	2,602	166	6.6	396	137,833	54	65
Average (37 counties)	1,429	68	2.9	1.3	671	32	1,584	75	3,684	175	7.4	499	214,998	67	54
Western Area															
South Dakota	2,193	115	3.6	1.5	664	35	2,130	112	4,988	262	8.1	613	287,432	73	76
Brown	3,197	157	1.9	0.7	1,740	85	2,347	115	7,284	359	4.4	2,031	854,300	80	60
McPherson	2,094	138	2.3	0.7	645	49	1,645	117	4,677	332	5.1	1,410	424,345	73	49
Kansas	1,563	138	1.4	0.7	554	49	1,258	111	3,375	298	3.1	1,133	421,552	60	44
Ellis	1,332	125	1.5	0.9	1,062	100	1,114	105	3,508	330	4.0	887	311,581	55	52
Finney	1,277	173	1.1	0.5	1,727	139	1,469	117	2,469	387	2.6	1,044	317,536	53	50
McPherson	1,405	140	1.1	0.6	619	116	586	110	1,954	366	2.7	638	262,754	58	53
Kearney	3,044	132	3.4	1.5	1,806	78	2,609	113	7,459	324	2.7	534	262,754	58	71
Pawnee	1,453	152	2.0	0.8	1,060	111	1,029	108	3,542	370	4.8	2,304	406,620	72	85
Pratt	1,550	165	2.3	0.8	1,248	119	1,394	105	3,183	319	4.8	957	379,525	80	99
Renov	1,825	152	2.7	1.1	1,170	98	1,158	102	3,183	319	7.3	2,944	602,339	76	69
Sedwick	3,265	121	3.6	1.4	1,760	65	2,750	97	4,150	346	6.2	1,198	328,407	76	75
Stafford	1,785	172	2.4	0.9	1,198	116	1,151	111	7,775	289	8.6	905	455,194	79	62
Sumner	3,093	135	2.8	1.1	1,908	83	2,172	94	4,134	399	5.6	1,036	378,587	80	74
Oklahoma	2,282	119	2.5	1.1	1,700	88	1,784	93	5,766	300	6.2	1,922	430,298	72	77
Harper	961	118	1.0	0.8	759	93	759	93	2,518	309	2.6	814	249,365	40	57
Payne	1,260	65	2.3	1.8	866	44	1,575	81	3,701	190	6.7	1,949	139,213	39	43
Woods	1,725	118	1.4	1.1	1,166	79	1,417	97	4,308	293	3.5	1,468	316,661	41	72
Average (19 counties)	1,957	132	2.1	1.0	1,243	84	1,522	103	4,722	319	5.0	952	404,246	66	65

Source: U. S. Census of Agriculture, 1950.

In the Western area there were more tractors and trucks per farm but, of course, less units per square mile or crop acre. There were 1,957 tractors per county which was equivalent to 132 per 100 farms; 2.1 per square mile; and 1.0 per 200 acres of crop land. The range was from 65 to 173 per 100 farms; from 1.1 to 3.6 per square mile; and from 0.5 to 1.8 per 200 acres of crop land (Table 16).

Topography and Road Systems

The extent to which the area is hilly and the roads follow valleys and lack hard surfaces affects the size of load which can be hauled, the number of trips to farms, and the miles traveled. Also, it affects the operating expenses and life of the trucks to some extent.

Occasionally the annual miles driven by a salesman will be large because he delivers in a river area where extra driving is required to get to bridges crossing the river. Also, washed-out bridges cause extra mileage.

The condition of farm lanes in the winter and especially during the thawing season in the spring often limits the size of load which can be delivered to a farm. The location of the storage tanks on the farmstead was not considered an important factor as most trucks had hoses of sufficient length to reach them.

Nature of the Competition

Both managers and salesmen as a general rule reported strong competition. It was difficult to evaluate the degree of competition in relation to the potential farm volume, especially by territories of individual salesmen. There were different numbers of bulk plants and tank trucks operating at the headquarters of each cooperative, but salesmen from companies in adjoining towns also came into part of the territory of most cooperative salesmen.

Sixty salesmen of cooperatives indicated that a total of 300 other salesmen were competing for the farm business in their territories. This was equivalent to five per cooperative salesman.

The extent or keenness of competition affected the volume and travel of salesmen. One manager, for example, indicated considerable variation in competition among the territories of each of his salesmen. In some he characterized it as rough, strong, bad, or severe, and stated that it definitely was one of the factors accounting for the smaller volume of the cooperative salesmen serving those areas.

Nature and Policies of the Cooperative

The effect of the cooperative's operations and its record over the years were also considered in studying delivery operations.

Type, Age, and Success

The salesman with the largest volume and the least miles driven per year would be expected to operate in the older, stronger, and most successful cooperatives. Associations with a good record of patronage refunds, especially if some have been paid in cash, would likely have salesmen with better performance records than those not able to pay refunds. Several representatives of cooperatives stated that the large volumes of salesmen were often due to the fact that the association had proved itself in handling petroleum and other supplies. "Nothing succeeds like success" was applicable.

Two managers stated that their relatively new oil associations had made rapid progress because a successful elevator association in each town had been serving about the same farmers for many years. Another stated that it did not take a "salesman" to deliver a large volume in the territory of a certain cooperative whose members were largely of one nationality and very cooperative minded. It only took an "order-filler" or "truck operator" because every farmer was a member and a patron and either placed his orders for fuel in advance or had standing orders to leave fuel when the tank truck salesman was in his community.

It was also mentioned that a salesman could build a large petroleum volume easier in an elevator-petroleum association than in one handling only oil products. The farmer could have more liberal credit extension terms because the association would later have an opportunity to collect the accounts when the farmers marketed their grain through the organization.

Since the associations included in this study were believed to be among the most successful in petroleum operations, the influence of type, age, and success was less pronounced than if all types had been represented.

Operating Policies

Various operating policies of the associations which have some effect on the performance of salesmen are as follows:

1. Loaning Farm Storage - If an association loans storage equipment to farmers the salesman can deliver larger amounts of fuel on each trip and reduce the number of trips or miles required to serve the farmer. It makes it possible for the salesman to place on the farm sufficient storage so he can operate on routes which are covered at specific intervals. Furthermore, it generally insures him of the entire volume of the patrons.
2. Volume or Quantity Discounts - If an association gives volume or quantity discounts this helps the salesman compete for the volume of the large users. Also, it encourages farmers to buy larger farm storage tanks which in turn helps the salesman to operate efficiently.

3. Nonfarm or City and Station Business - If the association does not restrict its business entirely to farmers, the salesman has an opportunity to increase his volume especially in the winter time by serving city fuel oil users. Also, he may serve commercial firms such as trucking lines and stone quarries, and churches, schools, service stations, and stores and garages with curb pumps.

4. Credit Policy - The strictness or laxness of the credit policy of an association affects the volume of its salesmen. Some gave 30 days credit while others limited credit to only one delivery. Only about 10 percent gave a discount of from 1 to 2 percent for cash. A few cooperatives paid 2 percent on loan capital funds advanced to them by patrons.

5. Adding Salesmen and Territories - A few associations with one or two salesmen were not interested in adding territories or salesmen because of problems in splitting up existing territories and objections of salesmen in having to build back their volume. This resulted in the present salesmen showing large volumes and commissions, but it was not taking advantage of an opportunity to increase over-all volume and provide service to a larger group of farmers.

6. Educational Work by Manager and Directors - Some associations did much more membership and educational work than others. This consisted of meetings, news letters, capital stock and patronage campaigns, picnics, round-ups, neighbor nights, personal discussions, and soliciting volume and membership work by the manager and directors.

The W & H Cooperative Oil Co., Badger, Iowa, for example, began some annual round-up meetings a few years ago when there was a distillate shortage to explain that patrons could get fuel but that its quality would not be too good. Meetings were first held in February with eight picked leaders at each director's home, making a total of nine meetings. Then each of the eight men pounded doors of patrons for two weeks in that director's district. A chicken dinner and a bus trip to the Coffeyville, Kans., refinery of Consumers Cooperative Association ended the round-up. As a result of this membership work by these 72 "fieldmen" at a cost of \$25 each for expenses, the association's volume doubled from 1 million to 2 million gallons in 2 years.

Certainly, salesmen who have support of this type should eventually deliver larger volumes and operate more efficiently than those who have to "go it alone."

Type of Delivery and Farm Storage Equipment

Delivery Equipment

Tank Trucks - The 57 associations included in this survey operated 135 tank trucks on a full-time basis and 3 on a part-time basis. Following

Table 17. - *Rated capacity, year manufactured, and ownership of trucks operated by petroleum cooperatives, 1950.*

Item	Western area	Eastern area	Total
<i>Number reporting</i>			
<u>Rated capacity</u>			
1 ton or under-----	0	4	4
1½ tons-----	27	58	85
2 tons-----	9	19	28
Total-----	36	81	117
<u>Year manufactured</u>			
1940-----	0	1	1
1941-----	1	1	2
1942-----	2	2	4
1943-----	0	0	0
1944-----	0	0	0
1945-----	0	1	1
1946-----	7	15	22
1947-----	5	11	16
1948-----	8	8	16
1949-----	9	30	39
1950-----	5	18	23
Total-----	37	87	124
<u>Owner</u>			
Manager-----	2	3	5
Salesman-----	4	54	58
Cooperative-----	23	34	57
Total-----	29	91	120
Associations reporting-----	24	33	57
Tank trucks operated full-time-----	38	97	135
Tank trucks operated part-time-----	0	3	3

Table 18. - Capacity of truck tanks operated by cooperatives, number of compartments in tanks, and previous and preferred capacities of tanks, 1950

Item	Western area	Eastern area	Total
<i>Number reporting</i>			
<u>Capacity of tank in gallons</u>			
Less than 600-----	1	9	10
600 - 699-----	4	33	37
700 - 799-----	7	16	23
800 - 899-----	14	24	38
900 - 999-----	0	4	4
1,000 or more-----	8	13	21
Total-----	34	99	133
<u>Number of compartments</u>			
3-----	1	1	2
4-----	17	18	35
5-----	13	40	53
6-----	1	0	1
7-----	1	4	5
Total-----	33	63	96
<u>Previous capacity in gallons</u>			
Less than 400-----	1	1	2
400 - 499-----	2	7	9
500 - 599-----	4	15	19
600 - 699-----	2	6	8
700 - 799-----	1	1	2
800 - 899-----	3	2	5
900 - 999-----	0	1	1
1,000 or more-----	0	1	1
Total-----	13	34	47
<u>Preferred capacity in gallons</u>			
Less than 800-----	3	13	16
800 - 899-----	11	31	42
900 - 999-----	4	1	5
1,000 - 1,099-----	16	11	27
1,100 or more-----	1	3	4
Total-----	35	59	94

are comments based on table 17 with respect to the age, capacity, and ownership of those on which such information was obtained:

1. More than three-fourths of the trucks in use in both areas in 1950 had a rated capacity of $1\frac{1}{2}$ tons; the remainder were 2 tons.
2. Practically all of the trucks were less than six years old with one-half of them less than three years in age. Only seven were manufactured in the period from 1940 to 1945, inclusive.
3. Data on 120 trucks indicated that approximately one-half were owned by the cooperatives and one-half by the salesman.

Truck Tanks - The size of the tanks used on delivery trucks has gradually become larger over the years as roads improved and farmers used increased amounts of fuel. In 1950, only 10 of 133 tanks, or 8 percent, had a capacity of less than 600 gallons, whereas data on 47 of these indicated that 30 formerly were less than 600 gallons in size (Table 18). Thirty-seven in 1950 were in the 600-gallon group, 23 were in the 700-gallon group, 38 were in the 800-gallon group, 4 were in the 900-gallon group, and 21 were in the 1,000-gallon or more group (Table 18). Only two of the 47 tanks which had been replaced were formerly more than 800 gallons in capacity. All truck tanks were owned by the cooperatives.

A greater proportion of the large tanks were in the Western territory -- probably because of the more level topography and the fact that there were more large farms that took bigger orders of fuel.

Data on 94 salesmen indicated that 31 of them preferred obtaining tanks holding 1,000 gallons or more when their present ones had to be replaced, and only 16 indicated a preference for tanks with capacities of less than 800 gallons. Forty-two preferred tanks holding between 800 and 900 gallons. The greatest proportion favoring larger tanks was in the Western area.

The importance of the size of truck tanks on the volume delivered by salesmen is difficult to measure because of so many other factors, but in the Western area none of the salesmen with tanks under 800 gallons in capacity delivered as much as 400,000 gallons. Of the seven delivering more than this amount, five had tanks with capacities of 1,000 gallons or more. In the Eastern area there was no direct relationship between the volume delivered and the size of truck tank among the salesmen who delivered less than 400,000 gallons. But of the 19 who delivered more than this amount only 7 had tanks of less than 800-gallons capacity and 12 had tanks each holding 800 to 1,050 gallons.

The size of delivery equipment thus has a definite bearing on the amount of fuel which a salesman can deliver in a day or a year and also on the number of miles traveled. With large equipment he can deliver a given

amount of fuel in less time and with less mileage because he does not have to make so many trips to the bulk plant for refilling.

Unloading Equipment - Information on 134 tank trucks showed that 116 were equipped with power take-off pumps and the remaining 18 had separate motors. Information was not obtained on the capacities of the pumps, but they generally ranged from 20 to 50 gallons per minute. Pumps were owned by all cooperatives except two where they were the property of the salesmen.

All trucks were equipped with meters which were owned by the associations. Only four trucks in Iowa and one in Oklahoma had dual sets of unloading equipment.

Mechanical unloading equipment has greatly improved the efficiency of salesmen as compared with the old system of "bucketing" fuel. It has become a necessity in areas where many farm storage tanks are mounted on overhead stands.

Farm Storage for Petroleum Fuels

Farmers in the territory served by Consumers Cooperative Association have greatly increased their fuel storage in recent years -- both because of increased consumption and because of the need for more storage to carry them through emergency periods of short supplies.

Table 19 shows wide variations in the capacity of storage on farms within each State. In general, farmers in the Eastern area had smaller storage than those in the Western area. About 34 percent had less than 200 gallons compared with 20 percent in the West, while only 9½ percent had more than 500 gallons compared with 25 percent for the Western group. Detailed data were not obtained on the amount of storage which was used for motor fuel and for heating fuel. No significant difference showed up, however, in the percentage of farmers having various amounts of storage for each type among the associations reporting.

Table 19. - Proportion of farm patrons with specified sizes of farm storage tanks for motor fuels, by States and associations, 1950

Association code number	Capacity of storage in gallons			
	Under 200	200-499	500-999	1,000 or more
	Percent of storage equipment			
Iowa				
1-----	40	30	30	0
2-----	45	54	1	0
3-----	47	50	3	0
4-----	27	68	5	0
5-----	45	45	8	2
6-----	15	70	15	0
7-----	25	50	25	0
8-----	10	80	10	0
9-----	25	75	0	0
10-----	10	88	2	0
11-----	25	50	25	0
12-----	5	75	20	5
South Dakota				
1-----	25	70	5	0
2-----	18	80	2	0
3-----	10	85	5	0
7-----	80	20	0	0
Nebraska				
1-----	5	90	5	0
2-----	25	75	0	0
3-----	5	75	20	0
4-----	10	75	12	3
5-----	10	65	23	2
Missouri				
1-----	90	10	0	0
2-----	50	50	0	0
3-----	90	10	0	0
4-----	50	50	0	0
5-----	50	40	8	2
6-----	15	45	40	0
Eastern Kansas				
17-----	50	40	10	0
18-----	50	50	0	0
19-----	50	40	10	0
20-----	20	75	5	0
21-----	60	25	15	0
22-----	50	48	2	0
Average-----	34.3	56.1	9.3	0.3
Western Kansas				
1-----	19	80	0	1
2-----	7	80	10	3
3-----	5	80	10	5
4-----	4	60	30	6
5-----	10	65	20	5
6-----	15	65	15	5
7-----	20	55	20	5
8-----	33	34	30	3
9-----	3	33	60	4
10-----	20	50	25	5
12-----	10	55	30	5
13-----	10	45	40	5
14-----	5	45	45	5
15-----	25	40	35	0
16-----	20	40	36	4
Oklahoma				
1-----	30	40	20	10
2-----	75	25	0	0
3-----	20	65	10	5
4-----	40	60	0	0
5-----	40	60	0	0
Average-----	20.5	53.9	21.8	3.8

Most tanks were above-ground and many were mounted on overhead stands. Information was not obtained on the advantages and disadvantages of various types of installations. 2/

Managers of some associations believed that the present storage on farms was adequate, but most of them thought that many farmers still needed larger storage equipment. The following were typical remarks with respect to this problem:

"Many of the farmers with drums should get tanks,"

"Those living far out should have larger storage,"

"Farm storage is generally adequate except at harvest time,"

"More farmers should have 300-gallon tanks,"

"Lack of adequate storage means more trips and larger delivery costs,"

"Inadequate storage in some cases reduces both service and efficiency,"

"Lack of storage prevents deliveries being made on regular two-week routes."

2/ In 1951 an experiment on farm storage of gasoline by Purdue University which was sponsored by Indiana Farm Bureau Cooperative Association showed the following results: (1) Above-ground storage wastes about 6 gallons for each 100 gallons a month from evaporation during the summer compared with 3 gallons by underground storage. This represents an additional loss of \$7 in two years which would pay for the extra cost of installing an underground tank. If the fuel had been drawn and replaced frequently, a greater loss from the outside type of tank would have been expected; and (2) fuel stored in above-ground tanks deteriorates in quality more rapidly than in underground tanks so that if it is stored longer than a month it may not be suitable for tractor consumption.

A similar study of farm gasoline storage in hot weather was made in 1951 by Cooperative G.L.F. Exchange, Ithaca, N. Y., who hired the laboratory of United Cooperatives, Inc., Alliance, Ohio, to conduct the experiments. Half of the tests were made under stimulated farm conditions in that gasoline was withdrawn and replaced at intervals as in farming operations.

The following results were obtained: (1) Underground storage with weighted vent and air-tight fill cap was most efficient with evaporation only one percent; (2) Underground storage with open vent and loose fill cap was second with 2.3 percent evaporation; (3) Above-ground storage tanks shaded from the sun showed evaporation losses of from 8.9 to 11 percent; (4) Above-ground storage tanks not shaded showed losses of 13.3 to 19.3 percent; (5) Fifty-five gallon drums in the sunlight lost 23 percent by evaporation; (6) There was no noticeable deterioration in the gasoline samples from the underground storage, but gasoline stored in above-ground shaded tanks lost some of its pep by evaporation; and (7) The gasoline in tanks unprotected from the sun showed an increase of 50 percent in gum content over the shaded tanks.

The location of the tanks on the farmsteads was seldom mentioned as a factor slowing down deliveries since trucks were all equipped with long hoses.

Farmers owned practically all of the tanks. Cooperatives or their salesmen loaned only a few. The associations used several methods to encourage farmers to buy tanks or otherwise increase their storage capacity. These were:

1. Selling tanks at cost or near cost. Approximately 60 percent of the associations sold tanks at cost to farmers. About 20 percent sold them either at cost plus 10 percent, or at cost plus a delivery or installation charge. One had a 3 percent handling charge. Around 20 percent of the associations, however, sold tanks at regular retail prices. Most organizations permitted farmers to pay for these tanks later out of their patronage refunds.

2. Volume or quantity discounts were given by 18 associations. These discounts ranged from $1/2$ cent a gallon on single deliveries or "drops" of 100 gallons or more to 2 cents on deliveries of 600 gallons or more.

Following is a summary of the number of associations giving various discounts:

<u>Discounts for minimum gallons per delivery</u>		<u>Number of associations</u>
<u>(Cents)</u>	<u>(Gallons)</u>	
$1/2$	100	2
$1/2$	200	2
$1/2$	250	2
$1/2$	300	3
$1/2$	400	1
$1/2$	500	1
1	200	2
1	300	2
1	1,000	1
2	600	1

<u>Discounts for minimum gallons per month</u>		
$1\ 1/2$	500	1
$1\ 1/2$	All over 1,000	1

Two of the associations required cash payment at time of delivery before discounts were given. The two associations giving $1\ 1/2$ cents a gallon discount allowed this for the total volume within one month rather

than for minimum deliveries or dumps of the amounts listed. One salesman loaned tanks on his own account and gave the farmers a discount of 1/2 cent a gallon until the tanks were paid for.

3. Educational work was conducted among farmers on the advantages of larger tanks to both the farmers and the cooperatives or salesmen. All associations encouraged farmers to obtain more fuel storage in order to reduce the number of trips to their farms. This in turn should lower delivery costs and result in more savings for the farmers. Also, it was pointed out that larger tanks would help the farmers keep a supply of fuel on hand, especially during periods of short supplies.

As mentioned, practically none of the associations loaned storage tanks to farmers, either on a gratis or rental basis. Several did loan a few 55-gallon drums in eastern Kansas, and two associations reported having loaned tanks but recently had discontinued this policy. Another in that area stated that about 50 percent of the tanks on farms were loaned by the association. Several indicated that competitors either loaned or rented a number of tanks two or three years ago. This caused considerable concern, but most of the competitors had now discontinued this practice.

Managers were generally opposed to loaning tanks to farmers because of the large amount of funds required and the extra work of delivering, installing, moving, and accounting for them. It was recognized, however, that loaning equipment would make it possible both to increase storage where it was needed and to put in the proper amount of storage so that deliveries could be made at regular and less frequent intervals. Also, it would insure that all of the patron's fuel would be purchased from the association so long as he was using its tank.

It is logical that the amount of storage would influence the number of trips or deliveries, the type of delivery system, the capacity of truck tanks, and hence delivery costs per gallon. Certainly, if some farmers do not have sufficient storage to last two weeks, the salesmen cannot operate on a regular two-weeks route without making extra trips to their farms.

Delivery and Other Practices of Salesmen

Delivery Systems Used

Specific Territories Served - All of the salesmen except those in four associations in the Eastern and two in the Western area served a specific territory. In three cases where the salesmen did not have separate territories they were employed on a salary basis and when they were not busy they worked at the elevator of the service station. In the other three cases, the commission salesmen had served the entire territory for many years and each had his own patrons, although some were served by either man. The managers of two associations, however, stated that when a change occurred, they favored designating a separate

territory for each man. There was little switching of salesmen from one territory to another on the theory that each would get a new group of farmers to become patrons.

Deliveries Made Mostly on Basis of Orders - All salesmen in the Western area except four, and all of those in the Eastern area except seven, made practically all deliveries on the basis of calls or orders -- both telephone orders and standing orders. In the Western area from one to three orders often made up a load of fuel because of the size of the farming operations.

All of the Western salesmen and three of the Eastern salesmen not operating entirely on orders made part of their deliveries on regular routes and part in response to orders, and four in the East operated largely on daily routes.

Great variation existed in the proportion of farmers who expected or permitted the salesmen to leave fuel in their tanks when it was needed, or to keep their tanks full without definite orders. These are referred to as patrons with "standing orders," and they ranged from 10 to 90 percent of the total patrons of different salesmen or associations. Usually a larger proportion permitted this in busy rather than in slack seasons of farm work.

Also, there was considerable variation in the number of patrons who would let the salesman dispose of any fuel remaining in his tank truck when he was in that area in order that he could return empty to the bulk plant. These might be referred to as "dumping points or patrons" and they also included schools, churches, and outlying service stations or curb pumps. The number of both types of patrons influenced the methods of making deliveries and the number of miles traveled in disposing of a load.

Of those who telephoned, or called in or personally left orders for fuel, some expected immediate service, while others gave either a half day or a full day's notice. Not a very large proportion gave two or more days notice or asked that fuel be left when the salesman was in that community. All of the associations encouraged farmers to give as much advance notice for fuel as possible so that orders could be grouped and routed in one community. Several stated that the office employees or anyone taking orders were instructed to always find out how soon the patron needed fuel. Some stated they always asked if the patron could wait until tomorrow for his fuel. Toll calls for fuel were accepted by a few Iowa cooperatives.

Orders Usually Grouped and Routed - The most common method of making deliveries in both areas was to group and route orders in one community so that a full load of fuel could be disposed of with a minimum amount of travel. This required sufficient advance orders from a locality to equal a load; supplemental patrons located along the way or in the

locality of the orders whom the salesman knew could take some fuel; or some of the "dumping points" previously mentioned.

A few salesmen used a system that involved neither advance orders nor scheduled routes. They anticipated about when the farmers in a certain locality would be in need of fuel and then began deliveries to them. Sometimes, however, one or two advance orders indicated when they should start serving an area. By means of personal orders obtained when they come to the farm and by standing orders they were able to dispose of a load within a community. They had somewhat of a regular route in a certain community or locality but one that was covered at varying intervals depending upon the farmers' needs.

One salesman had a visible ledger which enabled him to see when each patron was last served and the amount of fuel left at his farm. Another with only about 75 farm patrons used a large sales sheet on which their deliveries were posted to show what farmers bought fuel last and the date.

Following are some comments by managers and salesmen indicating how deliveries were made on the basis of orders:

Eastern Area

"Our salesmen usually have enough orders for a load before leaving the plant. Nearly all deliveries are on the basis of calls and salesmen stop at nearby neighbors to dispose of any remaining fuel. About 25 percent of the farmers permit us to leave fuel in their tanks without an order. Most of the remainder will take fuel when we stop. Of those calling in orders, about 20 percent want immediate service, 50 percent give us one day's notice, and 30 percent give two day's notice or tell us to leave fuel when we are in their neighborhood."

"I often have enough orders for 2 or 3 loads so group and route them to keep travel at a minimum. If I have only orders for part of a load, I can get rid of the rest by stopping at other farms en route or in the area of the orders."

"When I get an order I fill up and catch all my regular customers in that area. In certain localities I know just about where I can get rid of a load any time. I try to get an understanding with the big users in each community to fill their tanks at any time. Farmers long distances from the plant are not served unless they can be worked in on a route."

"My customers are trained to tell me when they must have fuel when they call in an order. If a large user located farthest from the plant has a 300-gallon tank I often personally loan him a 110-gallon tank and ask him to call me as soon as he uses the 300 gallons and starts on the 110."

"Enough orders usually come in every day to deliver a full load in each locality. We often have 10 to 12 orders in the book."

"There are usually a book full of orders ahead of me as about 80 percent of my patrons call in for fuel. This enables me to group and route them and thus keep travel at a minimum. I always come back empty."

"Deliveries are all made on orders and it is well understood that the cooperative wants two days advance notice. Few farmers give us permission to keep their tanks full as they prefer to order."

"I try to get to the patrons' farms before they have to call in, but I have no definite routes for each day of the week. I check on their needs from the last deliveries before going into an area. When a patron calls in we always ask him when he needs fuel."

"We don't wait on orders. We keep track of each man's use and when he will need fuel. We make up a route every two weeks on gasoline, although some patrons are 'hit' every week depending upon their storage. We use school houses and large farmers for 'dumping stations' to get rid of any fuel remaining on the truck. Every load is a pay load. Only 10 or 15 percent give us permission to keep their tanks full, but the rest will take fuel when we are in their area, especially if they are getting low."

"I have a regular territory and go into a community when I think the farmers are in need of fuel and dispose of the load. This is about once a week in the busy season. In slack seasons deliveries are made mostly on the basis of called-in-orders."

"I cover each community about once a week with orders determining the locality. About 75 percent of the patrons expect me to leave fuel when in their area. Our bookkeeper always asks how soon they will need fuel when they call in, and also letters encouraging farmers to give advance notice are used."

Western Area

"Our deliveries are made on orders which are grouped except in the case of the large ones. Most farmers will let you keep their tanks full in the busy season, otherwise they give a full day's notice."

"We generally wait for mail or telephone orders and develop routes around them. We always try to deliver a full load in an area. Those patrons living farthest out are always asked when they call in for fuel if they can wait until tomorrow. A few don't care about delivery costs; they wait until they are out of fuel and then want it immediately."

"We try to accumulate as many orders as possible before starting deliveries. In the busy season the manager will call orders out to the truck operator when he is in the country."

"We don't leave the bulk plant without an order except during the busy season. Farmers are encouraged to buy larger tanks by giving them a quantity discount for 300-gallon drops."

"Certain communities are served every day. I have a visible ledger on each patron which helps to determine those in need of fuel. Only about 30 percent of the farmers call in their orders."

"I divide my territory into three districts and try to make deliveries every three days during the busy seasons. In slack seasons, deliveries are made mostly on orders except for regular fuel oil customers."

"Deliveries are made on orders many of which represent a half load or more. A number of patrons do not want fuel left unless someone is home. A few large patrons are used as 'shock absorbers' for dumping extra fuel remaining on the truck."

"We tried covering routes every other week in areas which had few telephones."

Scheduled Routes Used by a Few Salesmen - Only four salesmen, all in the Eastern area, operated regular or scheduled routes on certain days of the week. Three stated that they each had from four to six routes. Two covered them every week during the busy farming seasons and every two weeks during the slack seasons; and one covered them twice a week in busy seasons and once a week in slack seasons. Three other salesmen attempted to operate routes in certain localities either on certain days of the week or when they knew that farmers were about in need of more fuel.

In the Western area one salesman had one route he covered every two weeks. It had been developed from one-half to four loads in three years. Two had some routes in the slack seasons only -- one of them covered every other week in an area of few telephones. Another served his large patrons during the busy seasons on a route every Monday morning. Two salesmen stated that weekly routes were used for fuel oil in the winter.

Following were comments by salesmen who operated on routes:

"I have five routes which are covered on specified days every week in busy seasons and every two weeks in slack seasons. About 95 percent of the patrons permit me to leave fuel in their tanks even though they are not at home."

---"I have six routes that are covered once a week in busy seasons. About all of the patrons expect me to keep their tanks full then, but only 10 percent agree to this during slack seasons."

"I have certain days when certain localities are covered. Usually I operate three routes in the busy season and six in the slack season. About 90 percent of the patrons permit me to leave fuel in their tanks."

"About 40 percent of my volume is delivered on four regular routes of which three are covered every week and one twice a week. Most require one-half day to cover and each has an average of 10 patrons. They know that I will be at their farm within an hour of the same time each week and they let me fill their tanks. Most of the orders come from sparsely settled areas and from farmers with large tanks."

"Each day I work in a certain locality and try to route the small gasoline fills as much as possible. I have five established routes which are covered weekly. About 50 percent of the farmers want to telephone in orders so I work them in on the routes. I try to route all fuel oil deliveries except the 500-gallon orders."

"I began covering two routes a day last year during the slack season. I generally made them twice a week and contacted 15 to 20 men a day. It took time to get farmers to agree to my leaving fuel on each of the regular route days."

Opinions of the Route System - There was considerable difference of opinion as to the practicability of scheduled routes that are covered at regular intervals. Several managers thought they would result in the most efficient operations if they could be used, but so far they have not been able to make the change. Lack of adequate farm storage and the hesitance of salesmen to change systems were among the principal reasons. Several managers thought routes would be more helpful to new salesmen than to old ones because the latter knew about where they could get rid of a load of fuel any time in a locality.

Following are some opinions expressed by both managers and salesmen regarding regular routes:

Eastern Area

"Routes won't work here because volume is too seasonal. At corn picking time five or six men ran out of gas in the field in the evenings and all wanted gasoline immediately. We got several patrons from competitors who were operating on a route system because they had to wait two or three days for service."

"Some farmers with large tanks and little use want to call in for fuel. With routes one would have to carry everything on his truck."

"We tried the route system and gave it up because of the irregular work; also some customers questioned whether the measure was accurate. The order system permits larger fills and discounts and this helps control credit."

"Routes would work better if we delivered only one fuel."

"Routes would mean too many small deliveries."

"I tried regular routes on Tuesday and Fridays, but the volume got so large I could not keep on them."

"We are opposed to routes because of so many small tanks on farms."

"Routes won't work because a few orders will break them. You need one truck for routes and one for orders."

"I believe the route system is best, but our fellows don't seem to be able to make it work here."

"We would like to develop routes in new areas, but do not believe it is necessary in old territories because our salesmen have been delivering fuel there for 22 years and can always dispose of a load with a minimum amount of travel."

"Routes would be especially helpful to our salesman who lives in another town. Last spring he almost lost one of his best patrons because the office could not find him when the patron was out of fuel."

"Routes help to build volume, reduce mileage and delivery costs, and give regular service."

"The salesmen using routes deliver the most volume."

"Routes are best but it is difficult for only one salesman in a cooperative to stay on schedule because of emergency calls."

"Routes are the best system. Farmers enjoy having you stop in even though they don't need fuel."

"Routes are fine for densely populated areas where farmers have about the same size storage."

"Routes would be the most efficient if they really worked, but would take time to get the farmers accustomed to them. Collections and variations in size of farms would be problems."

"I favor routes for new men, but our quantity discounts for 250-gallon drops might not work so well."

Western Area

"Routes are not applicable in this area because of so many large orders and such heavy consumption of fuel during the busy season."

"We tried a route system about a year ago, but it did not work out well because of differences in size of farm storage. In the winter the farmers don't want much fuel on hand, while in the summer they want it immediately."

"Routes won't work too well because some patrons don't want fuel until they can pay for it, while others don't want to be home when you deliver fuel to avoid paying for it. Those with drums require delivery twice a week which makes routes impossible."

"Routes would work in the winter but not in the summer. Roads and weather would sometimes make it impossible to keep on schedule."

"Our delivery men are not good enough salesmen to develop routes. Otherwise, routes would be all right in the winter and could be developed in the summer if each farm had the proper amount of storage."

"Deliveries could be made more satisfactorily on routes if trucks were equipped with stamping meters."

Need of Planning and Using a System in Making Deliveries - In summarizing, it is evident that if fuel is to be delivered efficiently the deliveries must be made in a systematic manner. Either the salesman must have sufficient advance orders, called in or standing, so that he can group and route them and dispose of a full load of fuel in a community, or he must make deliveries on established routes which are covered at regular intervals. Any other method will result in extra trips and mileage and in some cases returning with extra fuel.

In petroleum delivery the systematic dispatching of fuel is considered extremely important in efficiently getting fuel from bulk plants to service stations. This is even more important in making farm deliveries because of the greater number of patrons served and the types of roads which must be traveled.

Size and Location of Territory Served

The mileage traveled by a salesman is obviously affected by the size of area he serves and its location with respect to the bulk plant and where he lives. The size of his territory will in turn be determined on how densely the patrons populate an area and the amount of fuel they use.

If the territory of a cooperative is circular and extends 20 miles in each direction from the bulk plant, one-half of its area will be within 14.1 miles of the plant. 10/ But also, the area of a square territory which extends 20 miles each way from a plant is 1,600 square miles, or 26.6 percent more than the area of a circular territory which extends the same distance from the plant.

Furthermore, the size and location of the salesman's territory may be influenced by the policy of the association with respect to establishing new territories when it appears there is sufficient potential to add another salesman. The territory of each will be much smaller than where the management is content to stop with two, three, or four salesmen. Moreover, if several salesmen have to operate out of a central bulk plant they may have more mileage than those who operate from branch or outlying bulk plants.

The average size of territory served by the Eastern salesmen was 332 square miles and the median was 300 miles. One-fourth had less than 125 square miles and one-fourth had more than 500 square miles. The average of Western sslesmen was 590 square miles and the median was 500 miles. One-fourth had less than 300 miles and one-fourth had more than 700 square miles. 11/

10/ The area of a circle varies with the square of its radius. $\text{Pi} \times R^2 = 3.1416 \times 400 = 1,256$ square miles. One-half of this area is 628 and this divided by 3.1416 = 200, of which the square root is 14.1 miles.

11/ The average territory served by a group of cooperative salesmen in one of the central States in 1948 was 90 square miles or $2\frac{1}{2}$ townships. Cooperatives in the East generally serve a circular area about 25 miles each direction from the central bulk plant, the area of which would be 1,964 square miles. The older ones have as many as four salesmen which means that each serves a territory averaging about 491 square miles in size.

The numbers within various ranges were as follows:

<u>Square miles</u>	<u>Eastern Area</u>	<u>Western Area</u>
Less than 100	6	1
100 - 199	14	4
200 - 299	8	4
300 - 399	12	6
400 - 599	5	5
600 - 799	3	7
800 - 999	2	1
1,000 and over	6	5
Total	56	33

The territory of the Western salesman will usually average larger than that of the Eastern salesman because of the smaller number of farms and motor vehicles and the larger size of farms. It is difficult, however, to establish a desirable standard for size of territory in either area because of the factors already mentioned and the volume and the proportion of the potential business that the salesman is getting. If a cooperative starts out with two salesmen each would have a much larger territory than would be the case a few years later when the association has four salesmen.

Some idea of the area required to obtain a given volume which represents a specified proportion of the potential in the area may be indicated by the following:

1. Farms in the Eastern area included in this survey had 3.6 tractors, 3.5 autos, and 1.1 trucks per square mile. On the basis of 1,100 gallons of fuel used per year per tractor; 450 gallons per car, and 425 gallons per truck, a total of 5,452 gallons would be used per square mile by these motor vehicles. If a cooperative salesman handled 25 percent of this potential, he would have to cover a territory of about 183 square miles to attain the desirable standard of 250,000 gallons of motor fuel per year. If he handled 33 percent he would need 138 square miles.

2. Farms in the Western area, had 2.1 tractors, 1.6 autos, and 1.3 trucks per square mile. On the basis of 1,500 gallons used each year per tractor, 475 gallons per auto, and 525 gallons per truck, a total of 4,592 gallons would be used per square mile by these motor vehicles. A cooperative salesman handling 25 percent of the total would have to cover a territory of about 279 square miles to attain the suggested standard of 320,000 gallons of motor fuel for that area. If he handled 33 percent he would need 209 square miles.

Emphasis on Nonfarm and Station Business

The importance of city fuel oil and service station business in attaining a high total volume has been indicated by data presented in the forepart of this report. The potential volume will vary with the general area and territory served and whether the policy of the association is to get as much of it as possible. But if there is a good potential the amount which the salesman handles will depend a great deal upon his aggressiveness in going after it. More soliciting and educational work may be required among prospective city fuel oil patrons than farmers because of city people's lack of knowledge of cooperatives. In the case of churches, schools, and highway departments, this volume is often passed around to various firms but the cooperative should obtain its proportionate share.

Specializing in Oil Products or Handling Other Supplies

- Obviously a salesman can deliver a larger volume of petroleum products in a year if he does not devote any time to related automotive supplies and other items such as fly spray and paint. It would appear, however, that most salesmen could devote some attention to other supplies during periods of slack farm use of oil products. Those who are not near the desirable volume standards in oil products should have time to sell and deliver other supplies. This might also help build their petroleum volume.

Soliciting New Patrons

Not many salesmen or managers had definite programs of soliciting prospective patrons each week. Many, of course, talked with prospective patrons as opportunities arose. Data were not obtained on the number of persons solicited and the number obtained as new patrons. Some salesmen, managers, and directors participated with good results in membership and trade drives and annual round-up campaigns sponsored by CCA.

It is a well established fact in selling that "one has to make calls to get results." Some may contend that selling should not be necessary in a cooperative because the members own it. But many farmers do not become members until they have traded with the cooperative a while; therefore, salesmanship or soliciting helps get prospects on the patron list. This does not mean "peddling gasoline" in the usual sense, but a combination of selling the prospect on the idea or principles of the cooperative, on the quality of products, and on the services which he might expect. Several salesmen mentioned that they never missed an opportunity to discuss petroleum products or farm machinery with a farmer, nor to help him with some item such as putting on a tractor wheel when there was an opportunity to do so.

The value of soliciting is indicated by the following results from a volume building campaign of calling on prospective patrons by cooperatives in the Virginias, Delaware, Maryland, and Kentucky from January 21 to June 30, in 1950; 1,782 new patrons who used an estimated 3,033,622 gallons of fuel a year were obtained out of 4,835 prospects called on. This was a 37 percent return or more than 1 out of every 3 solicited. A total of 84 managers and salesmen participated which meant an average of 58 prospects called on and 21 new patrons obtained per man. The range in contacts was from 2 to 271 per man and in new patrons it was from 0 to 60 per man.

Controlling Credit

The extent to which each salesman extends credit depends a great deal upon the policy of the association as determined by the directors and administered by the manager. The salesmen, however, can do much to explain this policy to patrons; to encourage the payment of cash at times of delivery; and to collect accounts owed by patrons.

Approximately 10 percent of the associations gave discounts for cash "on-the-barrel-head." The amounts were usually 2 percent of sales or $\frac{1}{2}$ cent a gallon. Several cooperatives encouraged farmers to advance funds to them for use in paying for future purchases. They paid 2 percent on this loan capital. None added a carrying charge for credit business.

It is recommended that cash sales at time of delivery represent at least 75 percent of total sales and that not more than 10 days of credit sales be outstanding at a time. This would provide for some accommodation credit to take care of instances when no one is at home at time of delivery. The goal, however, should be 100 percent cash.

Controlling Shrinkage

Individual salesmen did not have records on the shrinkage of fuels, and few associations kept shrinkage data separate on bulk plant and service station operations. Shrinkages of 138 associations audited by CCA in 1950-51 averaged about 1.75 percent for gasoline; 1.5 percent for other refined fuels; 2.25 percent for lubricating oil; and 4.0 percent for grease.

About half of the associations metered gasoline from the bulk plants but only a few metered all fuels. It was the practice among all associations, except the larger ones with a warehouse or bulk plant manager, for the salesman to handle his own loadings. Most salesmen carried misdelivery insurance.

Shrinkage has been at least one-half of one percent higher in the northern than in the southern associations served by CCA because of temperature conditions and adjustments. However, since these

associations were interviewed, CCA has been supplying those in the North on a volumetric basis and those in the South on a temperature basis; hence their losses are now reported to be about the same.

On the basis of data obtained on shrinkage for the associations studied, the following maximum percentage standards are suggested for the combined operations of the bulk plants and salesmen in both areas: Gasoline, 1.0; other refined fuels, 0.7; lube oil, 1.0; and grease, 1.0 percent of volume handled. The shrink incurred in the actual operations of the salesmen, especially on oils and greases, should be very little.

Attention To Safety

The importance of safety in handling volatile fuels and in driving the tank truck cannot be overemphasized. The standard of performance, of course, is carefulness and no accidents of any type. This means carefulness in loading the truck at the bulk plant; in unloading fuel on the farms; in care and repair of the truck; and in operation of the truck on highways and farmsteads.

Personnel Factors of Salesmen

Ability and Characteristics

Unfortunately there are little statistical data to measure the ability and characteristics of the salesmen -- the most important influences on their performances. Opinions or evaluations of general managers were obtained, but these were limited by their experience with salesmen and by the fact that they were relative; that is, each salesman was compared with others in the same organization. Also, the writer in interviewing salesmen attempted to find out why they had large volumes or efficient operations, but it was not always possible to interview all the salesmen of each cooperative.

A salesman of the cooperative in Richmond, Mo., who started with a few customers $3\frac{1}{2}$ years ago and now has an annual volume of over 400,000 gallons listed the following pointers for building volume:

1. Know people - get acquainted with everyone as quickly as possible.
2. Be friendly and courteous -- especially with nonpatrons as all are prospective patrons.
3. Learn each person's interests and talk his language -- "Talk coon dogs with a coon dog man."

4. Don't argue; the customer is always right.
5. Don't run down competitors.
6. Always help the farmer with some little job when you call if he is working on his machinery or other equipment.
7. Set your meter to give patrons full measure. Ask a farmer to bring a 5-gallon can to you so that you can fill it to test your meter.

Managers of the cooperatives studied described those salesmen with high volumes and efficient operations. They found a good salesman had many of the following attributes:

1. He is honest and sincere.
2. He is a hard worker.
3. He is more aggressive than the other salesmen.
4. He has more initiative than the other salesmen.
5. He plans his work.
6. He gives dependable service at all times.
7. He is willing to work long hours to keep the farmers in fuel during busy seasons.
8. He understands the farmers' problems and always tries to be helpful.
9. He has a good personality.
10. He is courteous.
11. He really knows his products.
12. He is a natural salesman.
13. He enlists the help of the manager and directors in getting new patrons.

These were not listed in any order of importance but it appeared that the success of a salesman depended more upon his willingness to work and give dependable service than upon his sales ability or the method of paying him.

Experience and Tenure

Salesmen in the Eastern area had from six months to 24 years of service with the same cooperative and the median was 5 years. About 20 percent had been delivering fuel less than 3 years and another 20 percent for 15 or more years. Those in the Western area had from six months to 19 years of service with the median only 3 years. The number with various years of cooperative experience were as follows:

<u>Number of years</u>	<u>Eastern Area</u>	<u>Western Area</u>
	<u>(Number of salesmen)</u>	
Less than 3	12	11
3 - 4.9	16	7
5 - 9.9	18	0
10 - 14.9	8	0
15 - 19.9	5	3
20 - 24.9	8	0
Total	67	21

Some salesmen had served the same territory for several years, but in most cases they had served various areas because of revisions in territories. Also, some had previous petroleum experience in the area with other oil companies, and a few had worked for the cooperative in another capacity before becoming tank truck salesmen.

Those salesmen with considerable experience and length of service in the same territory had larger volumes than the newer or younger men. It takes time to establish the confidence of patrons and build a reputation for service. For example, the 12 high volume salesmen had an average of 9.4 years with the cooperative compared with 3.7 years for the 12 low volume men. And eight of 19 salesmen delivering over 400,000 gallons of fuel annually had been employed from 10 to 22 years by the same cooperatives.

Method of Paying

There was considerable difference of opinion as to the most satisfactory method of paying salesmen and its influence on their performance. Strong arguments were advanced by advocates of both the commission and the salary systems, and by those favoring a combination of both. Some had changed from salaries to commissions while others had made the opposite change.

As mentioned, about 85 percent of the salesmen surveyed in the Eastern area were on a commission basis while in the Western area about 85 percent were on a salary basis. This situation may be due in part to the fact that most of the Eastern cooperatives were separate oil associations, while those in the West were elevator-oil associations who

employed all personnel on a salary basis and interchanged them among departments. Also, a few organizations in Kansas had changed from a commission to a salary basis years ago because of unsatisfactory experiences in controlling credit and gross margins.

Most of the salesmen on a commission basis preferred this system and a majority of those now on salary indicated they would prefer receiving commissions. Several stated they favored a base salary plus a bonus or an incentive such as a supplementary commission.

Most managers favored the payment plans now in effect, although a few would change the basis or rates. The manager and board of one association preferred commissions but wondered if the rates were too high.

The principal arguments advanced in favor of the commission plan were:

1. It creates an incentive for the salesman to continually increase volume. He works harder. He doesn't work by the clock or by the hour.
2. Salesmen get paid in proportion to their efforts and volume.
3. Since salesmen on a commission usually own the truck it shifts the responsibility for the care of the truck from the cooperative to the salesman who drives it every day.
4. It relieves the management of the cooperative of credit problems if the responsibility for collection and bad debts is shifted to the salesmen.
5. It helps eliminate some of the inventory control of shrinkage problems of the management of the cooperative if the salesman is held responsible for shrinkage above an established amount.
6. It gives the salesman more freedom in operation than if he were on a salary basis.

The principal arguments advanced against the commission basis and in favor of the salary or salary plus a bonus or incentive plan were:

1. The income of the salesman on a commission basis is too seasonal -- especially in the Western area where volume is heavy in the spring and summer and light in the winter.
2. It often results in the salesman getting a greater net income or wage than other employees in supply and marketing cooperatives, and in some cases more pay than the manager receives. This causes dissatisfaction among employees.
3. It generally costs the cooperative more money than the salary basis. Farmers should not have to pay more than the actual cost of delivery based upon a good wage for the salesmen.

4. Tank truck salesmen do not need commissions for an incentive any more than a fieldman, bookkeeper, elevator man, or manager. Anyone on a salary who wants to work will do so, realizing that he will get paid accordingly.

5. Selling on a commission does not coincide with the principle of a cooperative organized "to purchase products for its members." In the strong cooperatives "salesmen" as such are not required -- only dependable "deliverymen" to take care of loyal patrons who are already sold on the cooperative.

6. It generally does not give the management sufficient control over the salesmen to get maximum use or efficiency out of them.

- a. Opposition arises to splitting up territories and adding new salesmen.
- b. Opposition may arise toward developing better delivery systems such as scheduled routes.
- c. It is not possible to use them in other departments during slack seasons of fuel use.
- d. Salesmen may eventually feel that they own routes and attempt to sell them as "good will" along with their truck if they leave the association.
- e. Salesmen will neglect those commodities which return them the least commissions.

7. It does not assure control of credit or gross margins. There have been cases where the salesman put out more credit on his own account than his resources warranted so the cooperative had to assume it. Also, in periods of strong competition margins may be reduced to maintain volume and commissions.

8. It is more difficult to adjust rates of commission on commodities than the salaries of salesmen.

In a number of cases where criticisms were made against the commission plan, it appeared that the administration of it was at fault rather than the method or plan. If a salesman's contract or agreement had set forth conditions or policies under which they were to work, many of the difficulties would not have arisen. For example, such a contract could provide for the annual review and adjustment of rates of commissions as volume and margins varied; for retaining some of the commission during heavy volume seasons for payment during slack seasons; for adjustments in territories any time that the manager may determine; and for specific provisions regarding credit, margins, and shrinkage.

One manager reported that each time he had added a salesman and reduced the territory of the present salesman, they had gone out and built up their volume again. As a result they had less mileage and operating expense and more net commissions than before. Another related an incident where he adjusted territories by cutting down on one around an outlying town. The salesman circulated a petition against this and proposed forming a new cooperative at that town. The association held round-up meetings of members and patrons in the area and as a result both that salesman and the adjoining one each increased their volume and their commissions by \$1,000 the next year and the idea of forming another cooperative was dropped.

There were some managers and salesmen, however, who believed that a base salary might well be supplemented by some sort of incentive payment. But they questioned the type of plan that should be used. One association, for example, in 1948 and 1949 paid the manager in addition to his salary a commission of 1/2 of 1 percent of gross sales and the other employees who had been employed one year received 5 percent of the net savings which was apportioned on the basis of their salaries. In 1950, both the employees and manager received 5 percent of the net savings for division among them. This was not satisfactory so no incentive payment was used in 1951, but the cooperative was considering giving commissions on certain supplies in the future.

As mentioned, one association paid its salesmen a base salary plus a small commission on all fuels, oil, grease, and supplies. Another paid its employees 7 percent of the net savings, which was apportioned among them on the basis of their salaries. A few gave small lump sum Christmas bonuses. Another paid one salesman 1/2 cent a gallon on all fuel sold in excess of 1,500 gallons a month in addition to a salary of \$250 per month.

It is difficult to evaluate the various methods of paying salesmen because of other factors affecting their volume and performance. Present volumes delivered do not always reflect a true picture because some salesmen had been on one basis only a short time and had built their volume on another basis. Or the present salesman may have inherited a large volume from his predecessor.

On the basis of the volumes delivered by salesmen in 1949-50, however, there was little difference between the salaried and the commission salesmen. The average volume of 30 commission men was 347,025 gallons and that of 24 salaried men was 338,328 gallons. The average delivery costs to the association employing commission men, however, was 1.48 cents a gallon, while that of the associations with salaried men was 1.21 cents a gallon. The difference was due mainly to the remuneration of the salesmen as tank truck expenses of each group of salesmen varied little. Net commissions (after expenses) averaged \$3,554 a salesman, while salaries averaged only \$2,600 a salesman for the year.

These data indicate, as mentioned before, that other factors such as the ability or characteristics of the salesman and control techniques of the association through salesmen's contracts are more important than the method of payment.

Training Programs

Many of the salesmen had received little training except that obtained from the manager or older salesmen in the cooperative, and from fieldmen of Consumers Cooperative Association. Some had picked up pointers at district or group meetings of cooperatives in the area or at the annual meetings of CCA.

Several salesmen had attended the petroleum schools sponsored each year by CCA and all spoke very highly of them. It was evident that they had a broader knowledge of delivery systems, types of equipment, business operations, and cooperative principles than those who had never attended such schools.

Several managers expressed the need for a good lube oil resale man to work with their salesmen on complaints, booking, and selling. They believed that CCA should either employ one for a district or help with the costs of employing one.

One salesman, however, who had experience with a major company said that CCA did not provide as much training for new men as other oil companies. He stated that one company sends a man out for a week with each new tank truck salesman.

It thus appeared that local cooperatives with the help of their regional association should devote more attention to training programs for salesmen. They seemed to be more in need of training and information on delivery systems and salesmanship or merchandising than on the products which they were handling. Perhaps the annual petroleum schools which CCA holds at Kansas City, Mo., and Coffeyville, Kans., could be supplemented with one or two schools on a district or area basis each year so that some of the salesmen from a cooperative could attend each time.

Sales Contests and Other Incentives

The experience of most cooperatives and other business firms indicates that selling campaigns involving contests and awards increase the volume of their salesmen. They stimulate interest and competition among salesmen within one association and among the entire group in a State or area.

The principal sales program involved booking orders for future delivery of lubricating oil and grease, and it received many favorable comments. CCA provided a stipulated bonus per gallon for those salesmen

who made their quotas for future orders provided deliveries were made. Also, trips to a cooperative summer camp or school at Estes Park, Colo., were awarded to those having the greatest increase in lube oil volume over the previous year. CCA's weekly bulletin occasionally gave recognition to those salesmen delivering exceptionally large volumes of refined fuels and other products. No special sales campaigns involving contests and awards were sponsored such as those used by certain other regional associations in the United States.

Only a few of the larger associations were providing certain welfare benefits to their salesmen to increase their security or provide an incentive for staying with the association. These included group life insurance, hospitalization, and retirement contributions in programs made available by Consumers Cooperative Association in cooperation with local associations. Vacations were provided for all salaried salesmen and sick leave on pay was generally provided depending upon circumstances, although usually no formal plans were in effect because of the size of the cooperative and the small number of employees.

CONCLUSIONS AND RECOMMENDATIONS

On the basis of the findings in this study, a set of suggested standards of performance for tank truck salesmen have been developed, a number of conclusions and recommendations to improve delivery operations offered, and several accounting forms for improving delivery operations suggested.

Standards of Performance

Tables showing the standards suggested from the findings in this study were presented on pages viii and ix of this report immediately following the summary.

Salesmen can compare their performances with these tentative measures ... taking into consideration that their individual sales will vary because of roads, density of population, and various other local conditions. Also, these standards are subject to revision as additional data are obtained. Information on a larger number of salesmen in the Western area would be desirable.

In general, a salesman in both Eastern and Western areas should deliver about 400,000 gallons of refined fuels annually. In the Eastern area he should serve about 175 farm patrons; in the Western, about 135. His total delivery costs should run somewhere around 1.2 cents a gallon of fuels delivered and 6.75 percent of total sales.

His monthly quotas will vary considerably in the Eastern and Western territories served by CCA. A look at the tables after the summary shows this difference by types of fuel, by months, and by quarters.

General Observations and Suggestions for Improvement

The following conclusions and recommendations are offered as a guide to salesmen, local cooperatives, and their regional organization -- Consumers Cooperative Association:

1. Performance and efficiency of tank truck salesmen vary widely among the more successful cooperatives in the territory served by CCA. This suggests that many possibilities exist for much improvement in the volume and efficiency of salesmen of all local cooperatives. Also, a number of associations could add one or more salesmen. Volume of the entire group might be increased from 33 to 50 percent if a majority of those now below the recommended standards could achieve them. Such an increase should result in lower per unit costs in both the local associations and CCA. Since farm deliveries of petroleum products represent the major source of CCA's volume, an intensive program for increasing and improving them should be adopted.
2. Salesmen who deliver larger volumes of petroleum products have little time to handle other supplies. Many of them, however, could sell and deliver more merchandise such as tires, batteries, accessories, fly spray, antifreeze, and paint during periods of seasonal demand for such items and during slack periods of farm consumption of refined fuels.
3. Many salesmen can increase their annual volumes by selling more fuel oil to city patrons and to churches and schools, and motor fuel to service stations, highway departments, and commercial firms such as stone quarrying and sand and gravel companies.
4. Type of farming did not cause any difference in the average volume of fuel delivered per salesman, but it did cause a difference in the type of fuel delivered and the seasonality of the volume. There was a steadier use of fuel in the Eastern area and a greater proportion of the volume consisted of fuel oil for heating purposes. These factors must be taken into account in establishing monthly and annual quotas of fuel for salesmen.
5. The topography and road systems should be considered in evaluating the performance of salesmen. Those operating in hilly areas over roads which follow valleys rather than section lines or over unimproved roads cannot use as large tank trucks, and they have more mileage per year than those operating under more favorable conditions.
6. The rapid increase in motor vehicles (up 23 percent from 1945 to 1950 in the area studied) should be considered in evaluating the performance of salesmen and cooperatives. Farm use of fuels probably increased considerably more than this because the increase in vehicles was represented almost entirely by tractors and trucks.
7. Some associations which have one or two salesmen were not taking advantage of their potential opportunities to serve farmers. Practically

all should have at least two salesmen and certain others with two or more should consider adding another. Although the present large volume of some salesmen would at first be reduced after their territories were reapportioned, experience indicates that they would soon build up their sales again.

8. Although there has been a marked trend toward the use of larger truck tanks, about half of those studied were less than 800 gallons in size. As it becomes necessary to replace these, the management of the cooperatives should acquire larger tanks -- those with a capacity of 800 gallons or more in the Eastern area and with 1,000 gallons or more in the Western area.

9. A further increase in the amount of farm storage is needed for refined fuels -- especially in the Eastern area. Farmers should be encouraged to buy tanks and pumps rather than have the cooperatives loan them equipment. This is one way members of a cooperative can help improve delivery efficiency as well as maintain a larger supply of fuel for themselves. Cooperatives, however, can encourage members to increase storage by selling tanks at or near cost, giving volume discounts for minimum-sized drops or monthly purchases; and by conducting educational work on the advantages of larger storage.

10. An insufficient number of salesmen making deliveries on scheduled routes were interviewed to get a good comparison between this system and that where deliveries are made on the basis of orders. It was evident, however, that cooperatives and their salesmen need to plan and use a definite system if deliveries are to be made efficiently. Either the salesmen must have sufficient advance orders, called in or standing, so that he can group them and dispose of a full load in a community, or he must make deliveries on established routes covered at regular intervals. Any other method will result in extra trips and mileage, or returning with extra fuel.

11. The size of the territory served by a salesman will depend upon the fuel potential in the area and the proportion of the potential which he can obtain. It appeared that in the Eastern area he would need about 180 square miles if he secured 25 percent of the farm motor fuel volume, or 90 square miles if he obtained half of it. Comparable figures for the Western area were 280 and 140 square miles, respectively.

12. Cooperatives need to adopt a definite plan for soliciting prospective patrons. They should provide for calls by the salesmen and follow-up work by the managers and directors. Weekly reports of prospects called on, new patrons obtained, and estimated annual volume of new patrons should be kept by each salesman.

13. Findings of this study indicated that the ability and characteristics of the salesmen and the control techniques used by the association are more important than the method of paying the salesmen. Where they are employed on a commission basis, it seems advisable to use salesmen's

contracts or agreements which set forth conditions and policies under which they are to work. These should provide, among other things, for review and adjustment of rates in relation to volume and margins; for adjustments in territories by the managers at any time; and for specific provisions regarding credit, margins, and shrinkage.

14. Intensive training programs for salesmen are needed to help them improve their operations and attain the standards of performance suggested in this report. CCA might supplement its annual petroleum schools at Kansas City, Mo., and Coffeyville, Kans., with one or two district schools each year so that some of the salesmen from each cooperative could attend each time.

15. More sales contests and awards should help improve the volume and efficiency of salesmen. Assistance on this would be needed from CCA and the program should provide for recognition of the best jobs in delivering refined fuels, lubricating oil, grease, and miscellaneous supplies, and for obtaining new patrons and members.

16. Cooperatives need much better records of the operations or performance of each salesman and his truck. Both the cooperative and the man should know what they are doing and where progress is or is not being made. Also, the investment in the tank truck justifies keeping detailed records of its performance. The types of records suggested and some recommended forms are included in the next section.

Suggested Accounting Forms

Few cooperatives and their salesmen kept adequate records of their delivery operations and performance. The need for more and better data has been discussed. Following are the principal records and measures or comparisons which should be kept on each salesman and his truck:

1. Quantities of fuels by at least five types of fuel (gasoline, tractor fuel, diesel fuel, kerosene, and distillate fuel oil) plus lubricating oil and grease; and each of these by three types of patrons purchasing the fuel (farmers, nonfarmers, and service stations and other dealers). Types of patrons can be designated on the daily sales journal with abbreviations in different colors and the totals for each compiled from it rather than posting them in separate columns under each fuel.

2. Total sales of petroleum products and of miscellaneous supplies.

3. Credit and cash sales, and amount collected on accounts.

4. Shrinkage in quantities of each product.

5. Miles driven on farm deliveries and on calls on prospective patrons; miles driven on city deliveries and calls; and total mileage.

6. Salaries, commissions, bonuses, and social security or payroll taxes paid to salesmen.
7. Operating expenses of the truck, including depreciation -- regardless of who owns it.
8. Operating expenses and depreciation of truck tanks, pumps, and meter.
9. Other delivery costs of the salesmen such as labor hired.
10. Card index or list of farmers by townships or territory designating patrons and showing number of motor vehicles, kind of home heating equipment, amount of farm storage and similar data. Also, a list of city fuel oil users and those who are patrons.
11. A record of prospects called on, new patrons obtained, and approximate annual volume of new patrons.
12. A map showing farmsteads and patrons in territory, and routes covered each day where routes are used.
13. Truck book showing data, kind of fuel, and quantity purchased by each patron, and amount owed the cooperative.

The various measures, ratios, or comparisons which should be made from the data obtained from these records are indicated in the tables on suggested standards on pages viii and ix in the summary of this report.

Suggested forms for keeping certain records and for making various efficiency comparisons follow.

FORM 1 - VOLUME DELIVERED, BY TYPES OF PATRONS AND PRODUCTS
During Year Ended December 31, 195__

Tank truck salesman _____

Cooperative _____

Address _____

Month	Gasoline			Tractor fuel To farms	Diesel fuel To farms	Kerosene		Distillate fuel oil		
	To farms	To non-farms	To stations			To farms	To non-farms	Total	To farms	To non-farms
Jan.										
Feb.										
Dec.										
Total										

Gallons

Month	Total refined fuels			Lubricating oil		Grease		Total sales of petroleum products	Sales of tires, batteries, accessories
	To farms	To non-farms	To stations	To farms	To others	To farms	To others		
Jan.									
Feb.									
Dec.									
Total									

Gallons

Pounds

Dollars

Note: Sales of each fuel to non-farmers and to stations can be checked or identified with a colored pencil on the daily sales journal and the totals for each transferred to a form for each month. The monthly totals can then be transferred to this form.

FORM 2 - NUMBER OF MILES DRIVEN AND DELIVERIES AND CALLS MADE
During Year Ended December 31, 195__

Tank truck salesman _____

Cooperative _____ Address _____

Month	Speedometer reading		No. of miles driven			No. of deliveries made	No. of other calls made ²	No. of new patrons obtained
	Beginning	Ending	Total	On farm deliveries and calls	On city deliveries ¹			
Jan.								
Feb.								
Mar.								
Apr.								
May								
June								
July								
Aug.								
Sept.								
Oct.								
Nov.								
Dec.								
Total								

¹Includes approximately _____ miles driven per month on personal business.

²Includes solicitation, educational, and collection calls.

Note: A daily form should be prepared for each month and the totals transferred to this form.

FORM 3 - TANK TRUCK OPERATING EXPENSES
For Year Ended December 31, 195__

Salesman _____ Truck make and year _____

Cooperative _____ Address _____

Miles driven during year _____ Mileage on truck at end of year _____

A - TRUCK OPERATING EXPENSES

Month	Gasoline		Oil		Grease	Tires and tubes	Repairs	Misc. ¹	Total
	Gals.	Value	Gals.	Value					
Jan.		\$		\$	\$	\$	\$	\$	\$
Feb.									
March									
April									
May									
June									
July									
Aug.									
Sept.									
Oct.									
Nov.									
Dec.									
Total		\$		\$	\$	\$	\$	\$	\$
Per mile	-	¢	-	¢	¢	¢	¢	¢	¢

Mileage per gallon of gasoline used-----mi.

B - TANK, PUMP, AND METER EXPENSES

1. Repairs----- \$ _____	4. Depreciation----- \$ _____
2. Insurance----- _____	5. Miscellaneous----- _____
3. Taxes----- _____	6. Total----- \$ _____

C - TOTAL TANK TRUCK EXPENSES----- \$ _____

¹Miscellaneous Expenses:

Licenses----- \$ _____	Depreciation----- \$ _____
Insurance----- _____	Other----- _____
Taxes----- _____	Total----- \$ _____

Note: A daily form should be prepared for each month and the totals transferred to this form.

FORM 4 - ANALYSIS OF DELIVERY COSTS
For Year Ended December 31, 195__

Salesman_____ Truck make and year_____

Cooperative_____ Address_____

Total gallons delivered_____ Total miles driven_____

	<u>Amount</u>	<u>Per gallon</u>	<u>Per mile</u>
A. Pay of Tank Truck Salesman:			
1. Salary-----	\$ _____	_____ ¢	_____ ¢
2. Bonus or incentive pay-----	_____	_____	_____
3. Commissions earned-----	_____	_____	_____
4. Truck maintenance allowance-----	_____	_____	_____
5. Total-----	\$ _____	_____	_____
B. Social Security and Other Payroll Taxes-----	\$ _____	_____ ¢	_____ ¢
C. Tank Truck Operating Expenses			
1. Gasoline----- Gals. _____	\$ _____	_____ ¢	_____ ¢
2. Motor oil----- Gals. _____	_____	_____	_____
3. Grease-----	_____	_____	_____
4. Tires and tubes-----	_____	_____	_____
5. Repairs-----	_____	_____	_____
6. Licenses and insurance-----	_____	_____	_____
7. Taxes-----	_____	_____	_____
8. Depreciation-----	_____	_____	_____
9. Other miscellaneous expenses-----	_____	_____	_____
10. Total-----	\$ _____	_____ ¢	_____ ¢
Amount paid by cooperative-----	\$ _____	By salesman---\$ _____	
D. Tank, Pump, and Meter Expenses			
1. Repairs-----	\$ _____	_____	_____
2. Insurance-----	_____	_____	_____
3. Taxes-----	_____	_____	_____
4. Depreciation-----	_____	_____	_____
5. Miscellaneous-----	_____	_____	_____
6. Total-----	_____	_____	_____
Amount paid by cooperative-----	\$ _____	By salesman---\$ _____	
E. Total Delivery Costs - On Salary Basis-----	\$ _____	_____ ¢	_____ ¢
(Total of A, B, C, and D)			
F. Total Delivery Costs - On Commission Basis-----	\$ _____	_____ ¢	_____ ¢
(Total of A, B, and D. If pump and meter are owned by salesman, exclude their expenses here and include them under G-5)			

G. Miscellaneous Expenses of Salesmen on Commission			
1. Truck operating expenses-----	\$ _____	_____ ¢	_____ ¢
2. Extra labor hired-----	_____	_____	_____
3. Shrinkage charged to commissions-----	_____	_____	_____
4. Accounts receive charged to commissions-----	_____	_____	_____
5. Pump, meter, and other expenses-----	_____	_____	_____
6. Total-----	\$ _____	_____ ¢	_____ ¢
H. Net Income of Salesman From Commissions-----	\$ _____	_____ ¢	_____ ¢
(A minus C and G)			

FORM 5 - MONTHLY VOLUME AND MILEAGE DATA ON SALESMEN FOR REGIONAL
WHOLESALE ASSOCIATIONS (Double post card form)

Date: _____

Gentlemen:

Please send us the volume of petroleum products delivered by each of your tank truck salesmen for the month indicated on the attached card. Report gallons for all products except grease.

(Motor fuel includes gasoline, tractor fuel, and diesel fuel.

Heating fuel includes kerosene and distillate fuel oil.

Remarks: _____

Petroleum Distribution Division
Regional Cooperative Association
City _____, State _____

(Reverse side for address of local cooperative)

.....

Cooperative _____	Address _____			
Salesman _____				
Month _____				
Motor fuel (gals.)				
Heating fuel				
Total fuel				
To farms				
To others				
Lube oil				
Grease (lbs.)				
Miles to farms				
Miles in city				
Total miles				

(Reverse side for address of Regional
Cooperative Association)

FORM 6 - PROSPECTIVE PATRONS CALLED ON AND NEW PATRONS OBTAINED

Salesman _____ Week ended _____

Cooperative _____ Address _____

Date	Names of prospects called on	Estimated		Remarks
		Annual gallonage	Farm storage	
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Total				

Other new patrons obtained _____

Remarks: _____

FORM 7 - PATRON'S PURCHASE RECORD FOR USE IN TRUCK BOOK
During Year Ended December 31, 195__.

Name _____ Address _____ Location _____
 Tractors - kind and size _____ Trucks _____ Autos _____
 Heating equipment _____ Other equip. _____ Crop acres farmed _____
 Annual needs: Gaso. _____ Tractor fuel _____ Diesel fuel _____ Kero. _____
 Dist. fuel oil _____ Total _____ Lube oil _____ Grease _____
 Peak 2 week's needs: Gaso. _____ Tractor fuel _____ Diesel _____ Kero. _____
 Dist. fuel oil _____ Storage capacity: Gaso. _____ Tractor fuel _____
 Diesel _____ Kero. _____ Dist. fuel oil _____
 (Show gallons purchased unless otherwise indicated)

[illegible]

Note: One book should be kept for farm patrons and another for non-farm city patrons.

APPENDIX

Appendix table 1. - Number of salesmen, by States, delivering specified annual volumes of refined fuels in 1949-50¹

Total gallons delivered	Western Iowa	Northwestern Missouri	Eastern South Dakota	Eastern Nebraska	Kansas	Northern Oklahoma	Total
<i>Thousands</i>	<i>Number of salesmen</i>						
Less than 150----	2	1	0	0	2	0	5
150-199-----	4	4	3	0	1	2	14
200-249-----	6	1	2	5	5	2	21
250-299-----	10	3	1	1	2	2	19
300-349-----	9	2	4	1	8	2	26
350-399-----	8	1	2	1	1	1	14
400-449-----	1	2	0	1	4	0	8
450-499-----	5	1	2	0	1	1	10
500-549-----	2	0	3	0	1	0	6
550-599-----	0	0	1	0	0	0	1
600-649-----	0	0	0	0	0	0	0
650-699-----	1	0	0	0	0	0	1
700 and over----	1	0	2	0	0	0	3
Total-----	49	15	20	9	25	10	128

¹For 12 months ending on September 30, 1950 in most associations.

Appendix table 2. - *Tractors on farms in six States, 1945 and 1950*

State	Total number of tractors			Number per 100 farms		Number per square mile		Number per 200 acres of crop land	
	Jan. 1 1945	Apr. 1 1950	Percent increase	1945	1950	1945	1950	1945	1950
Iowa-----	181,049	241,090	33.2	87	119	3.4	4.5	1.5	1.9
Missouri---	76,110	125,964	65.5	31	55	1.4	2.3	0.9	1.3
S. Dakota--	62,772	88,991	41.8	92	134	0.9	1.3	0.7	0.9
Nebraska---	96,203	127,652	32.7	86	119	1.3	1.7	0.8	1.1
Kansas-----	116,651	146,498	25.6	83	111	1.5	1.9	0.8	1.0
Oklahoma---	70,395	93,804	33.3	43	66	1.2	1.7	0.8	1.2
Total-----	603,180	823,999	36.6	64	94	1.6	2.1	0.9	1.2

Appendix table 3. - *Trucks and automobiles on farms in six States, 1945 and 1950*

State	Total number of trucks			Number per 100 farms		Total number of automobiles			Number per 100 farms	
	1945	1950	Percent increase	1945	1950	1945	1950	Percent increase	1945	1950
Iowa-----	37,386	62,612	67.5	18	31	224,216	228,541	1.9	107	112
Missouri-----	47,225	77,464	64.0	19	34	165,243	162,558	-1.6	68	71
S. Dakota-----	22,230	37,796	70.0	32	57	68,717	77,319	12.5	100	116
Nebraska-----	33,761	54,398	61.1	30	51	118,572	121,220	2.2	106	113
Kansas-----	60,908	89,354	46.7	43	68	133,593	133,966	0.3	94	102
Oklahoma-----	44,381	68,895	55.2	27	48	100,584	95,224	-5.3	61	67
Total-----	245,891	390,519	58.8	26	44	810,925	818,828	1.0	86	93

Appendix table 4. - Total tractors, automobiles, and trucks on farms, and number of farms in six States, 1945 and 1950

State	Total number of vehicles			Number per 100 farms		Number per square mile		Number of farms		Percent decrease
	Jan. 1 1945	Apr. 1 1950	Percent increase	1945	1950	1945	1950	1945	1950	
Iowa-----	442,651	532,243	20.2	212	262	8.2	9.9	208,934	203,159	-2.8
Missouri----	288,578	365,986	26.8	119	159	5.2	6.7	242,934	230,045	-5.3
S. Dakota----	153,719	204,106	32.8	224	307	2.3	2.9	68,705	66,452	-3.3
Nebraska----	248,536	303,270	22.0	222	283	3.3	4.1	111,756	107,183	-4.1
Kansas-----	311,152	369,818	18.9	220	281	4.1	4.9	141,192	131,394	-6.9
Oklahoma-----	215,360	257,923	19.8	131	181	3.8	4.6	164,790	142,246	-13.7
Total--	1,659,996	2,033,346	22.5	177	231	4.3	5.3	938,311	880,479	-6.2

